PB87-110284

Guidance for the Reregistration of Pesticide Products Containing Chlorpyrifos as the Active Ingredient

(U.S.) Environmental Protection Agency
Washington, DC

Sep 84

U.S. Department of Commerce
National Technical Information Service
NTIS

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO.	2.	3. Recipient's Accession No. PB87 110284/AS

4. Title and Subtitle
Guidance for the Reregistration of Pesticide Products Containing CHLORPYRIFOS as the Active Ingredient.

5. Report Date
Issued September 1984

6.

7. Author(s)
EPA, Office of Pesticide Programs, Registration Division

8. Performing Organization Rept. No.
540/RS-87- 003

9. Performing Organization Name and Address
US Environmental Protection Agency
Office of Pesticide Programs
Registration Division TS-767C
401 M Street, SW
Washington, D. C. 20460

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address
Same as #9

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

This document contains information regarding the reregistration of pesticide products containing the subject active ingredient. The document includes how to register under a registration standard, regulatory position and rationale, and summaries of data requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.

17. Document Analysis a. Descriptors

Pesticides, standards, regulations, manufacturing, chemistry, toxicology, residues, ecology, path of pollutants.

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement Publicly Available	19. Security Class (This Report) Unclassified	21. No. of Pages 218
	20. Security Class (This Page) Unclassified	22. Price

(See ANSI-Z39.18) See Instructions on Reverse OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

540/RS-87-003

PB87-110284

GUIDANCE FOR THE REREGISTRATION OF PESTICIDE PRODUCTS

CONTAINING

CHLORPYRIFOS

AS THE ACTIVE INGREDIENT
059101

Case # 0100

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDE PROGRAMS

WASHINGTON, D.C. 20460

September 30, 1984

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA. 22161

TABLE OF CONTENTS

Introduction 1

I. Regulatory Position and Rationale. 4

Site Pest Table of Contents 29

II. Requirement for Submission of Generic Data 34

III. Requirement for Submission of Product-Specific Data 37

IV. Submission of Revised Labeling and Packaging Information. 95

A. Label Contents 95

1. Product Name 95
2. Company Name and Address 95
3. Net Contents 95
4. Product Registration Number. 96
5. Producing Establishment Registration Number. 96
6A Ingredient Statement 96
6B Pounds Per Gallon Statement. 96
7. Front Panel Precautionary Statements 96
7A Child Hazard Warning Statements. 97
7B Signal Word. 97
7C Skull and Crossbones and Word Poison 97
7D Statement of Practical Treatment 97
7E Referral Statement 97
8. Side/Back Panel Precautionary Labeling 97
8A Hazard to Humans and Domestic Animals. 98
8B Environmental Hazard 98
8C Physical or Chemical Hazard. 98
9 Misuse Statement 99
10A Storage and Disposal Block 99
10B Directions for Use 99

B. Collateral Information 99

V. Instructions for Submission. 100

APPENDICES

II-1	Bibliography
II-2	FIFRA §3(c)(2)(B) Summary Sheet - EPA Form 8580-1
II-3	Certification of Attempt to Enter Into an Agreement With Other Registrants for Development of Data EPA Form 8580-6
III-1	Product Specific Data Report (End-Use Products) EPA Form 8580-4
IV-1	40 CFR §162.10 Labeling Requirements
IV-2	Table of Labeling Requirements and Sample Labels
IV-3	Physical/Chemical Hazards Labeling Statement
IV-5	Storage and Disposal Statements
Note:	Appendices IV-4 and IV-6 are not germane to this document and are not included.

INTRODUCTION

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 3(g), as amended in 1978, directs EPA to reregister all pesticides as expeditiously as possible. Each registrant of a manufacturing use product of the active ingredient who wishes to continue to sell or distribute that product must apply for reregistration.

To fulfill this Congressional mandate, we have established the Registration Standards program which will review all pesticide active ingredients first registered before January 1, 1977. These pesticides will be reviewed in use clusters which are prioritized on the basis of a ranking scheme giving preference to pesticides used on food and feed crops.

The Registration Standards program involves a thorough review of the scientific data base underlying pesticide registrations and an identification of essential but missing studies which may not have been required when the product was initially registered or studies that are now considered insufficient. Our reassessment results in the development of a regulatory position, contained in this document, on each pesticide and its uses. The regulatory position may require the registrant to modify product labels to provide additional precautionary statements, restrict the use of the pesticide to certified applicators, provide reentry intervals, modify uses or formulation types, specify certain packaging limitations, or other requirements to assure that proper use of the pesticide poses no potential adverse effects to human health or the environment.

The scientific review, which is not contained herein but is available upon request, concentrates on the technical grade of the active ingredient and identifies missing generic data. However, during the review of these data we are also looking for potential hazards that may be associated with the formulated (end-use) products that contain the active ingredient. If we find serious concerns, we will bring formulated products under the provisions of the Registration Standards program to the extent necessary to protect the public.

EPA has the authority under FIFRA §3(c)(2)(B) to require that certain registrants submit generic data that will answer our questions regarding the hazard that may result from the intended use of the pesticide under review. Further, §3(c)(2)(B) provides that these data are to be submitted by those registrants who do not qualify for the formulator's exemption [FIFRA §3(c)(2)(D)]. Normally, this means that the registrants who are responsible for filling the data gaps are the manufacturing-use product producers (basic suppliers of the active ingredient). However, end-use producers will not qualify for the formulator's exemption if the source of their active ingredient: (1) is not registered with EPA, and/or (2) is produced by the registrant's firm, or a firm which has ownership in common with the registrant's firm. These end-use producers can qualify for the formulator's exemption if they change their source of supply to a registered source, provided the source does not share ownership in common with the registrant's firm. If the end-use product registrant decides to switch sources, a new Confidential Statement of Formula, EPA Form 8570-4, must be submitted to the appropriate Product Manager within 90 days of receipt of this Guidance Document. The chart on the following page shows what is generally required of those who do and do not qualify for the formulator's exemption in the Registration Standards program.

If you decide to request the Agency to discontinue the registration of any of your products subject to the reregistration requirements of this Guidance Document, please notify the Product Manager named in the cover letter, within 90 days from the receipt of this document, that you wish to voluntarily cancel the registration(s). If you decide to maintain your product registration(s), you must provide the information described in the following pages within the timeframes outlined. EPA will issue a notice of intent to cancel or suspend the registration of any currently registered product if you fail to comply with the requirements set forth in this Guidance Document.

This Guidance Document will be supplemented by EPA with additional information about compliance with data support requirements. In Union Carbide Agricultural Products Co. Inc., et. al. v. Ruckelshaus, EPA was enjoined from permitting or implementing any use of data where the submitter's compensation is to be determined under §3(c)(1)(D) of FIFRA. EPA is assessing the implications of the injunction for the reregistration process. Because this situation is currently unresolved, EPA has decided to proceed with the requirements in this Guidance Document which do not relate to compliance with the §3(c)(1)(D) provisions and to supplement the Document with additional guidance when circumstances permit. Failure to comply with the provisions of the subsequent guidance will also result in issuance by EPA of an intent to cancel the affected product registration(s).

Registrants are reminded that §6(a)(2) of FIFRA requires you at any time to submit factual information raising concerns of possible unreasonable adverse effects of a pesticide. You should notify the Agency of interim results of studies in progress if those results show possible unreasonable adverse effects.

PRODUCTS SUBJECT TO THE REGISTRATION STANDARDS PROGRAM	ACTION(S) REQUIRED TO MAINTAIN REGISTRATION
I. Products That Do Not Qualify For The Formulator's Exemption	
A. Single Active Ingredient Products*	These products must be reregistered. To obtain reregistration, labeling, packaging and data requirements must be satisfied in accordance with the Registration Standards Guidance Document.
B. Multiple Active Ingredient Products	These products will not be reregistered at this time. However, generic data required to continue the registration of the active ingredient under review, as described in the Registration Standards Guidance Document, will be required and some labeling precautions may also be required.
II. Products That Do Qualify For The Formulator's Exemption	Only when additional restrictions or labeling are needed to protect human health or the environment will these products be subject to the Registration Standard requirements. Affected products will be dealt with in a variety of ways, including but not limited to the Label Improvement Program and special intent to cancel notices.

* End-use products of registrants who also produce a manufacturing-use product will not be required to be reregistered provided that registrant fulfills the requirements specified in the Guidance Document for manufacturing-use product(s). Such end-use products will be subject to the labeling changes required for products in "II" above. If there are no manufacturing-use products registered by any company end-use products will be required to be reregistered.

NOTE: If all registrants in "I" above fail to meet the requirements in I-A and B above, then the registrants in "II" lose their right to qualify for the formulator's exemption and become subject to the requirements in I-A and B.

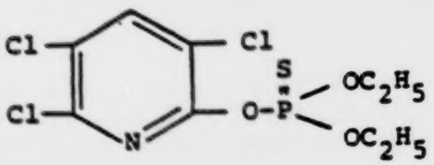
I. REGULATORY POSITION AND RATIONALE

A. Introduction

This guidance document describes the Agency's regulatory position on registration of manufacturing use products (MPs) containing the insecticide chlorpyrifos. The Agency's position is based on an evaluation of all accepted uses of registered products under Sections 3 and 24(c) of the FIFRA with chlorpyrifos as the sole active ingredient. This document considers known chemical and toxicological properties of this chemical, as well as the established tolerances for residues in food and feed commodities. From these considerations the Agency sets forth the data and labeling requirements that must be met by registrants in order for the products to be registered or reregistered under this document. To be registrable under this document, MPs must list chlorpyrifos as the sole active ingredient. The tables accompanying this document list the data gaps which must be satisfied through submission of additional information. Future MPs which differ appreciably from those described in this document may require that amendments be made to the document to reflect the differences. Data which were received by the Agency on or after January 1, 1970 may be compensable.

B. Description of Chemical and Use Profile

Structural Formula:



Empirical Formula:
$C_9H_{11}Cl_3NO_3PS$
mol. wt. 350.6
C.A.S. # 2921-88-2,
Shaughnessy # 059101

Chlorpyrifos is the American National Standard Institute's accepted common name for 0,0-diethyl-0-(3,5,6-trichloro-2-pyridyl)phosphoro=thioate. Other names include Brodan, Dowco 179, Dursban, Eradex, Lorsban, Pyrinex, trichlorpyrphos and phosphorothioic acid 0, 0-diethyl-0-(3,5,6-trichloro-2-pyridinyl) ester.

Initial development of this compound was started in the early 1960's under the code name Dowco® 179. Dow Chemical Company U.S.A. (Dow) issued a technical brochure in 1956 informing cooperating researchers and other interested parties of the physical and chemical properties of the compound. Later that year, Kenaga and co-workers first described the broad spectrum activity, persistence and stability of its toxic action under various conditions. The first registration was issued to Dow on September 9, 1965 for control of chinch bugs on lawn and turf grasses. On April 5, 1966 a U.S. Patent was assigned to Dow. Chlorpyrifos is currently marketed by Dow under the tradenames of Dursban® for their domestic use products and Lorsban® for their agricultural line of products.

Technical chlorpyrifos is a white crystalline solid. It has a melting point of 41.5-43.5 °C (pure material). Under normal conditions, chlorpyrifos is a stable chemical in neutral or acidic aqueous solutions. This stability decreases with increasing pH. The chemical can be stored for indefinite periods of time under proper conditions.

This chemical is manufactured in the United States solely by Dow. The following companies produce registered formulation intermediates using Dow's technicals: Burroughs Wellcome, Fairfield American Corp., Insecta-Paint, Inc., McLaughlin Gormley King Co., Penick Corp., Southern Mill Creek Products Co., Inc., Stephenson Chemical Co., Inc., Woodbury Chemical Co. of Homestead, and the Zoecon Corp. There are 31 Manufacturing Use Products (MP'S) registered with a range of active ingredient chlorpyrifos from 0.33 to 99.0%.

Chlorpyrifos is manufactured overseas by Makhteshim-Beer Shiva (Israel). Foreign formulators include the All India Medical Corporation (India), and Planters Products, Inc., (Philippines).

Chlorpyrifos is registered to control insect pests on the following food and feed crops: alfalfa, almonds, apples, asparagus, bananas, beans (dried and succulent), broccoli, brussels sprouts, cabbage, cauliflower, Chinese cabbage, citrus fruits, corn (field and sweet), cotton, cranberries, cucumbers, dill, grapes, lentils, mint, nectarines, okra, onions (dry bulb), peaches, peas, peanuts, pears, plums (prunes), pumpkins, radishes, rutabagas, sorghum (grain), soybeans, strawberries, sugar beets, sunflowers, sweet potatoes, tomatoes (imported only), turnips, and walnuts. This chemical is also registered for use as a direct application to beef cattle and as a sheep, turkey and horse premise treatment, and for treatment of dogs, dog kennels, dog bedding and quarters, domestic dwellings, farm buildings, storage bins, and commercial establishments (including food areas of food handling establishments), ornamentals, lawns and turf, and terrestrial structures (termiticide use) and for use in residential and aquatic areas as a mosquito adulticide and larvicide, respectively.

Chlorpyrifos may be formulated with allethrin, d-trans-allethrin, s-bioallethrin, fenfluralin, bis(tributyltin)oxide, chlorthal-methyl, copper 8-quinolinolate, diazinon, dichlorvos, diphenamid, methyl parathion, monuron, neburon, N-octyl bicycloheptene dicarboximide, phenothrin, piperonyl butoxide, pyrethrins, resmethrin, siduron, Sulfox-cide, tetramethirin, thiophanate-methyl.

The applications to food/feed crops may be dormant, delayed dormant, foliar, seed treatments, or direct at-planting soil applications. Applications of the pesticide are generally made using ground equipment although aircraft may be used for corn, cotton, peanuts, sorghum and aquatic noncrop areas.

There are 1,019 federal section 3 registrations (269 companies), 220 Special Local Need section 24(c) registrations and 45 intra-state products (14 companies), for chlorpyrifos.

C. Regulatory Position and Rationale

The Agency has reviewed the available data concerning toxicology, environmental and ecological effects and residue and product chemistry. Based on the review and evaluation of these data and other relevant information on chlorpyrifos, the Agency has determined that it should continue to allow the registration of chlorpyrifos after considering the following:

1. The current data base does not show that any of the criteria listed in section 162.11(a) of Title 40 of the U.S. Code of Federal Regulations have been met or exceeded for any of the uses of chlorpyrifos listed in the Guidance Document. Neither chlorpyrifos or its major metabolite 3,5,6-trichloro-2-pyridinol (TCP) have been shown to be neurotoxic, oncogenic, teratogenic, or mutagenic in studies that have been reviewed to date. Although chlorpyrifos has been deemed extremely toxic to fish, birds and other wildlife, and the Agency is concerned about human exposure from dietary and nondietary sources, the Agency is not initiating a Special Review at this time because sufficient data do not exist to support such action. The most appropriate regulatory action is to move expeditiously to fill these data gaps. The Agency will then make a determination as to the future registrability of the affected uses.

2. The Agency requires that all products in toxicity categories I and II bear an appropriate reentry statement. Since there is a lack of adequate dissipation, exposure, and acute inhalation data, it is required that registrants add to the end use product (EP) labels a 24-hour reentry interval. The state of California has also established this reentry time interval for chlorpyrifos.

3. Data are available to assess the acute toxicological effects of chlorpyrifos to humans. Technical chlorpyrifos is assigned Toxicity Category II on the basis of acute oral effects and Toxicity Category III on the basis of dermal and eye irritation effects. Human hazard precautionary labeling statements inform applicators so as to minimize the acute hazards associated with these routes of exposure. The data base for chlorpyrifos includes among many acute studies three studies submitted by Velsicol Chemical Corp. which were conducted by Industrial Bio-Test Laboratories, Inc. These studies were validated by Health Canada.

The Pesticide Incident Monitoring System (PIMS) reports on chlorpyrifos from 1970 through 1981, contain 319 incidents associated with human exposure, 23 involving animals, 12 involving environmental contamination, and 1 involving plants. Most of the incidents occurred during domestic use, while the other incidences occurred with agricultural uses, formulation, mixing and loading and during other miscellaneous situations. Most of the human exposures were the result of inhalation and dermal exposure. There were three human fatalities caused by chlorpyrifos and/or chlorpyrifos in combination with other active ingredients. Two were caused by drinking the pesticide product(s) and one was caused by inhalation, dermal and possibly some oral exposure from misuse of the product. The Agency is concerned about these incidences, particularly the relatively high proportion from domestic uses. The high proportion of incidences may be indicative of the popularity and broad spectrum of uses of chlorpyrifos in and around the home, lawn and garden. Furthermore, the Agency is interested in whether or not some of the incidences are from normal exposure routes (dermal and inhalation) with or without typical dietary exposure of residues. To better understand exposure levels additional exposure studies are being required. This is discussed in more detail below.

4. A full tolerance reassessment has not been completed because of certain residue chemistry and toxicology data gaps. Further, the preliminary tolerance reassessment conducted for this document establishes a new, lower no observable effect level (NOEL) for chlorpyrifos. This affects the percentage utilized by the accecptable daily intake (ADI) by increasing it from approximately 94 to 313% for the established tolerances.

   The Agency is concerned about this high TMRC to ADI ratio relative to dietary exposure but more importantly, the Agency is concerned with total human exposure to chlorpyrifos and its metabolites, including non-dietary sources. In addition to having many uses on crops, chlorpyrifos is a popular and wide spectrum insecticide that is recommended for treatment of lawns, ornamentals, domestic dwellings, and many other sites such as edible and non-edible areas of commercial, transportation, and food handling establishments. Therefore, the Agency is concerned whether or not the uses of chlorpyrifos result in significant exposure to certain populations and whether the exposure level(s) pose unacceptable risks to these populations.

To better understand, quantify and qualify the total exposure and to evaluate potential risks to applicators, residents of homes and to the population in general, the Agency is imposing data requirements for crop and non-crop uses. Plant and animal metabolism studies are required to better define the metabolites, especially the major metabolite, TCP. Also, exposure studies are required for indoor and lawn applications of chlorpyrifos. The Agency has already initiated under a separate 3(c)2(B) action dated February 23, 1984, the requirement for additional indoor air monitoring data for chlorpyrifos' termiticide use. These data are required for submission to the Agency by mid 1986. The additional required studies imposed by this Guidance Document are to qualify and measure parent and metabolite compounds that people will be exposed to on surfaces and in the air from the other uses and applications of chlorpyrifos. Regarding the concerns for total human exposure, the Agency has decided that it is not appropriate at this time to initate a Special Review for chlorpyrifos because of the lack of sufficient residue and exposure data that are needed to assess the potential hazards to humans. Upon receipt and assessment of these required data, the Agency may find that certain regulatory action may be appropriate at that time. Also, depending on the results of the residue chemistry data, additional toxicological information on TCP may be required. During this period when the ADI has been exceeded and the human exposure data are deficient, the Agency will not establish new tolerances or register new uses of chlorpyrifos that have a significant additive impact on human exposure.

The tolerances for chlorpyrifos residues in or on the forages and hays of lima beans and shap beans will be deleted as soon as possible since these commodities are also included under the bean forage and hay tolerances.

5. New and/or amended environmental precautions and use restrictions are being imposed for EPs to reflect the chemical's hazardous effects to non-target species. The data base is complete except for a fish embryo-larval study and a simulated or actual large scale field study for aquatic organisms, both of which are being required. The available ecological effects data on chlorpyrifos indicate that it is extremely toxic to aquatic invertebrates and other wildlife and that it poses a threat to

non-target species from both aquatic and general agricultural uses. Therefore, the Agency is requiring field dissipation data and field studies on aquatic effects of this chemical for the mosquito larvae control use. A full battery of environmental fate studies are required, as discussed below. Depending on the results of the dissipation and other environmental fate studies, the Agency may find it necessary to require additional field studies to measure effects on aquatic non-target species from agricultural crop uses.

The Agency lacks data to adequately characterize this chemicals effects on aquatic species' populations. Therefore, a Special Review will not be initiated at this time. We will require these needed studies and impose EP labeling requirements to ameliorate the hazards to aquatic and other wildlife species.

In regard to effects on endangered species, the Agency is not taking any specific action under this document. The Agency will be pursuing this under a "cluster approach" with other pesticides of similar uses. After review of the cluster, the Agency's current plans are to notify (by early 1986) the states' agricultural extension offices of special endangered species labeling restrictions and precautions. These offices will then provide appropriate notification to potential users of chlorpyrifos.

6. Available data are insufficient to fully assess the environmental fate of chlorpyrifos. It is unstable in water and the rate of hydrolysis increases with temperature. Degradation in aerobic soils varies depending on soil types ranging from loamy sand to clay. Degradates of both aerobic and anaerobic breakdown include 3,5,6-trichloro-2-pyridinol, 3,5,6-trichloro-2-methoxypyridine and two unidentified compounds. Chlorpyrifos, when applied to aquatic environments, rapidly dissipates from the water, but the method of dissipation is not known. Chlorpyrifos is not mobile in sandy loam and loamy sand soils, and therefore is not expected to be a potential hazard to groundwater contamination. However, data on mobility and leaching are required and should further define chlorpyrifos' potential to leach into groundwater. Additional data are required for hydrolysis, photodegradation, aquatic metabolism, dissipation and accumulation of this compound.

7. The Agency is imposing a crop rotation label restriction that limits the rotation only with crops that are registered for chlorpyrifos use because data from a rotational crop accumulation study indicates that chlorpyrifos and/or its soil metabolites accumulate in certain tested crop species. Although this study has some protocol deficienies it is sufficient enough to support this restriction. Because of the deficiencies, additional

studies are required. Until these new data are submitted and evaluated the Agency is imposing the restrictions for EPs.

8. MPs containing chlorpryifos as the sole active ingredient may be registered or reregistered for sale, distribution, and use under the conditions set forth in this document. Registrants must provide and agree to develop additional data, as specified in the tables of this guidance document, to maintain existing registrations or to obtain new registrations of substantially similar products.

9. In accordance with FIFRA, the Agency's policy is not to cancel or to withhold registration merely for the lack of certain data (see section 3(c)(2)(B) and 3(c)(7) of FIFRA). Rather, publication of this guidance document provides a mechanism for identifying data needs, and registration under this document allows for the upgrading of labels during the period in which the required data are being generated. After the data have been reviewed, the Agency will then determine how this information will affect the registration of this chemical.

E. Criteria for Products Subject to the Guidance Document

This guidance document covers all manufacturing use products that contain chlorpyrifos as the sole active ingredient. Applicants for registration or reregistration of such products must comply with all terms and conditions that are described herein. This includes making a commitment to fill data gaps on a schedule specified by the Agency. Also, applicants for reregistration must follow the instructions that are contained in the guidance document and complete and submit the appropriate forms within the specified time frames. End-use products must be in compliance with the labeling changes specified in this document.

F. Acceptable Ranges and Limits

1. Product Composition Standards

To be fully covered under this guidance document, MPs must contain chlorpyrifos as the sole active ingredient. Each product formulation proposed for registration must be fully described with appropriate certification of limits.

2. Acute Toxicity Limits

The Agency will consider for registration any MP provided the product is supported by appropriate acute toxicity data and the labeling for the product bears appropriate precautionary statements.

3. Use Patterns

To be registered under this document, MPs containing chlorpyrifos must be labeled for formulation into other MPs or end-use products only for the categories listed below. The attached "EPA Index to Registered Pesticides" entry summarizes all currently acceptable uses for single active ingredient products containing chlorpyrifos, including sites of application, target pests, dosage rates, restrictions and limitations and the method and frequency of application.

-Terrestrial, non-domestic, food uses

-Terrestrial, non-domestic, non-food uses

-Domestic outdoor uses

-Aquatic, non-food uses

-Greenhouse, non-food uses

-Forestry uses

-Indoor uses

G. Required Labeling

All MPs containing chlorpyrifos must bear appropriate labeling as specified in 40 CFR 162.10, in addition to the following specific labeling requirements.

1. Labeling Requirements for Manufacturing Use Products

All MPs must state that they are intended only for formulation into other manufacturing use products or end-use products for uses accepted by the United States Environmental Protection Agency.

2. Precautionary Statements

Labels for all MPs containing chlorpyrifos must bear statements reflecting the acute human toxicity of this compound.

The following statements are required on all MP labels:

- All MPs containing chlorpyrifos 15% and greater must bear the signal word WARNING. The Hazards to Humans and Domestic Animals paragraph must read as follows:

  "HAZARDS TO HUMANS AND DOMESTIC ANIMALS

  WARNING: May be fatal if swallowed. May be fatal if absorbed through skin or clothing. Avoid breathing of vapors. Wash throughly after handling. Do not wear contaminated clothing. Keep away from food, feedstuffs and water supplies."

- All MPs containing less than 15% must bear the signal word CAUTION. The Hazards to Humans and Domestic Animals paragraph must read as follows:

  "HAZARDS TO HUMANS AND DOMESTIC ANIMALS

  CAUTION: May be harmful if swallowed. Do not take internally. Avoid contact with eyes, skin, and clothing. Avoid breathing vapors or dusts. Wash throughly after handling. Keep away from food, feedstuffs and water supplies."

- All MPs must bear the following Environmental Hazard paragraph:

  "ENVIRONMENTAL HAZARDS

  This pesticide is extremely toxic to fish, birds and other wildlife. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or public waters unless this product is specifically identified and addressed in a NPDES permit. Do not discharge effluent containing this product into sewer systems without previously notifying in writing the sewage treatment plant authority. For further guidance, contact the nearest EPA Regional Office."

2. Label Requirements for End-Use Products

a. Precautionary Statements

Labels for all EPs containing chlorpyrifos must bear statements reflecting the acute human toxicity of this compound. The following statements are required on all EP labels:

- ° All EPs containing chlorpyrifos 15% and greater must bear the signal word WARNING. The Hazards to Humans and Domestic Animals must read as follows:

  "HAZARDS TO HUMANS AND DOMESTIC ANIMALS

  WARNING: May be fatal if swallowed. May be fatal if absorbed through skin or clothing. Avoid breathing of vapors. Wash throughly after handling. Do not wear contaminated clothing. Keep away from food, feedstuffs and water supplies."

- ° The following reentry statement must appear on the agricultural use labels at the end of the paragraph for HAZARDS TO HUMANS.

  "Do not allow reentry into treated areas within 24 hours unless protective clothing is worn. Protective clothing consists of at least a hat or other suitable head covering, a long sleeved shirt and long legged trousers or a coverall type garment (all of closely woven fabric covering the body, including the arms and legs), shoes and socks."

- ° All EPs containing less than 15% must bear the signal word CAUTION. The Hazards to Humans and Domestic Animals paragraph must read as follows:

"HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: May be harmful if swallowed. Do not take internally. Avoid contact with eyes, skin, and clothing. Avoid breathing vapors or dusts. Do not wear contaminated clothing. Wash throughly after handling. Keep away from feed, foodstuffs and water supplies."

- All EPs must bear an Environmental Hazard paragraph. This paragraph must be prefaced with the heading "ENVIRONMENTAL HAZARDS" and read as listed below:

(a) Aquatic End Use:

"This pesticide is extremely toxic to fish, birds, and other wildlife. Fish and other aquatic organisms may be killed at application rates recommended on the label. Consult your State Fish and Game Agency before applying this product to determine this products impact on aquatic life forms. Cover or incorporate spills while loading. Do not contaminate water by cleaning of equipment or disposal of waste."

The following statement must appear in the directions for use section of the label: "For use only in logging ponds, standing water, temporary rain pools, intermittantly flooded areas, stagnant water and other similar non-crop areas that serve as mosquito breeding sites. Shrimp and crab may be killed at application rates recommended on this label. Do not apply where these are important resources. Do not apply to water used for irrigational, recreational or domestic uses."

(b) Terrestrial End Use (except forest use):

"This pesticide is extremely toxic to fish, birds, and other wildlife. Do not apply directly to water. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. Cover or incorporate spills. Do not contaminate water by cleaning of equipment or disposal of waste."

(c) Forest Use:

> "This pesticide is extremely toxic to fish, birds, and other wildlife. Do not apply directly to water except under the forest canopy. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. Cover or incorporate spills. Do not contaminate water by cleaning of equipment or disposal of waste."

- The following labeling statements are required for the uses listed below:

(a) Cattle dip:

Because of the formation of an unidentified metabolite generated in cattle dipping solutions the following statement is required in the use directions:

> "The addition of superphosphate into the dipping solution enhances the stability of the solution and is therefore recommended."

(b) The label directions for direct application to animals should state,

> "Apply only this pesticide product to the animal during the recommended treatment schedule. Do not apply other pesticide products."

(c) Crop uses (agricultural and home garden EPs):

> "Plant, in chlorpyrifos treated soils, only those crops listed on this or other chlorpyrifos product labels."

H. Tolerance Reassessment

Tolerances have been established (21CFR 193.25, 21CFR 561.98, 40 CFR 130.342) for chlorpyrifos and its metabolite 3,5,6-trichloro-

2-pyridinol (TCP) in or on the following raw or processed agricultural commodities: rutabagas, sugar beet roots and tops, seed and pod vegetables, dried sugar beet pulp and molasses, onions (dry bulb), bean forage, pea forage, tomatoes, cucumbers, radishes, dill, pumpkins, citrus fruits and oil, dried citrus pulp, apples and dried apple pomace, pears, cherries, nectarines, peaches, plums (fresh prunes), grapes, and dried grape pomace, almonds and almond hulls, walnuts, corn (fresh and grain), corn forage and fodder, corn oil and soapstock, kiwi fruit, mint hay and oil, peanuts, peanut hulls, and peanut oil, sunflower seeds and hulls, sorghum milling fractions, milkfat, eggs, poultry fat, cattle meat and meat by-products of cattle, goats, hogs, horses and sheep.

Although no additional residue data are required for the following crops, the following amendments or new tolerances which reflect the data base are required since these were included in the now obsolete seed and pod vegetable group: cowpeas (0.1 ppm), dry beans (0.1 ppm), lentils(0.1 ppm), dry and succulent peas (0.1 ppm), cowpea forage (1 ppm) and lentil forage (1 ppm). Petitions to amend or establish these tolerances must be submitted within six months from the date of this document. The tolerances for chlorpyrifos residues in or on the forages and hays of lima beans and snap beans also are included under the bean forage and hay tolerances. Therefore, the Agency will act to delete these duplicative tolerances.

Additional plant and animal metabolism studies are required to fully qualify and quantify the parent compound and its metabolites, including the major metabolite TCP in ruminants and poultry and in corn and representative root and legume crops. Also, additional specific crop residue data are required to support the existing tolerances for chlorpyrifos residues in or on the following commodities: sweet potatoes (or a 125-day PHI must be established), turnip roots and greens, broccoli, brussels sprouts, cabbage, chinese cabbage, cauliflower, lima beans, snap beans, soybeans, bean hay, cowpea hay, lentil hay, pea hay, soybean forage, hay and straw, peppers, cranberries, strawberries, sorghum grain, sorghum forage and fodder, alfalfa forage and hay, bananas (only regulatory information from exporting countries is required), cottonseed, figs, and okra.

The primary toxicological concern associated with chlorpyrifos is acetylcholinesterase (ChE) inhibition. Over the years, the relevance of each of the ChE determinations (plasma, RBC and brain) to human health has been the subject of much scientific debate. A recent WHO monograph (GS0100206) stated that erythrocyte (RBC) cholinesterase inhibition may be a better indicator of this biochemical effect of anti-ChE pesticides than plasma ChE because RBC ChE is thought to be biochemically identical to ChE at the synapse whereas plasma ChE is considered to be quite different. However, brain ChE may be inhibited in the absence of either RBC or plasma ChE inhibition and the pattern of inhibition appears to vary from one anti-ChE agent to another. Plasma cholinesterase inhibition is often a more sensitive indicator of anti-ChE activity than RBC or brain ChE inhibition, although its relevance to human health has not been clearly established. Marked inhibition of plasma ChE (in the absence of RBC ChE inhibition) coincides with the level at which the classic clinical signs of ChE inhibition are noted using chlorpyrifos. A human cholinesterase study (GS0100200) demonstrates a Lowest Observed Effect Level of 0.1 mg/kg/day based on 9 days of exposure. The NOEL in this study is 0.03 mg/kg/day (based on 20 days of exposure). Previously, the Agency had relied upon a 2-year rat feeding study which had a NOEL for plasma and RBC CHE inhibition of 0.1 mg/kg/day. Although the human study was of short duration and used only four subjects per dose level, it is used to set the ADI because the findings are similar to the animal studies and do not require an interspecies extrapolation. The ADI has been set at 0.003 mg/kg/day from a NOEL of 0.03 mg/kg/day and a 10-fold safety factor. The TMRC has been recalculated and will utilize approximately 313% of the ADI for the established tolerances.

The Agency is concerned about the resulting expansion of the TMRC significantly above the ADI, however the Agency still believes that the established tolerances offer sufficient protection to the public who consume chlorpyrifos and TCP residues in their diet. The actual residue levels to which the public is likely to be exposed are considerably less than indicated by the TMRC for reasons which include the following:

- Not all of the planted crop for which a tolerance has been established is treated with the pesticide.
- Most treated crops have residue levels which are below the established tolerance levels.
- Processing or time to market often result in further residue reductions.
- Preparing food for consumption often results in residue reductions.
- Not all crops contributing to the TMRC (PADI) are likely to be consumed by an individual.
- Market basket surveys conducted by FDA indicate that little if any real pesticide residues actually remain in/on food as consumed by the general population. For example, of the more than 75,000 samples which were analyzed by FDA, only about 1,300 samples showed findings greater than 0.01 ppm.

- The TMRC and tolerances include the TCP metabolite which does not cause CHE inhibition and therefore does not contribute to the NOEL which the ADI is based on.

The U.S. tolerance expression for chlorpyrifos currently includes TCP because there is insufficient residue and toxicology data to adequately characterize this major metabolite. If sufficient data were provided, the Agency could reconsider the necessity of its inclusion in the tolerance expression. Obviously, some relief could be gained by lowering the percentage that is utilized by the ADI, and there could be more compatability with the maximum residue levels (MRL's) of Codex Alimentarius and/or the tolerances of

Canada and Mexico which include only chlorpyrifos *per se*.

International Tolerances

The following International Tolerances exclude the principal metabolite of chlorpyrifos, TCP, in their tolerance expression.

Crop	Tolerance (ppm)	
	Canada	Mexico
Apples	-	0.05
Bean forage	-	1
Broccoli	0.1	-
Brussels sprouts	0.1	-
Cabbage	0.1	-
Cattle meat & meat by-products	1	-
Cauliflower	0.1	-
Corn forage	-	0.1
Corn (fresh & grain)	0.1	0.1
Dry beans	0.1	-
Kiwi fruit	0.1	-
Lima beans	0.1	-
Onions	0.1	-
Peaches	-	0.05
Pears	-	0.05
Peas	0.01	-
Snap beans	0.1	0.05
Sorghum forage	-	1.5
Sorghum grain	-	0.75

Strawberries	0.1	-
Sugar beets (roots)	0.1	-
Sunflower seed	0.1	-
Sweet potatoes	-	0.1

The latest Codex Alimentarius entry for residues of chlorpyrifos per se are:

Crop	Maximum Residue Limit (Mg/Kg)
Apples	1
Cabbage	0.05
Cattle meat	2
Cauliflower	0.05
Chinese cabbage	1
Citrus fruits	0.3
Cottonseed & oil	0.05
Dry beans	0.2
Eggs	0.05
Grapes	1
Kiwi fruit	2
Lima beans	0.2
Milk	0.01
Mushrooms	0.05
Onions	0.05
Pears	0.5
Peppers	0.5

Poultry meat	0.1
Sheep meat	0.2
Snap beans	0.2
Sugar beets (roots)	0.05
Tomatoes	0.5
Turkey meat	0.2

TABLE OF CONTENTS TO SITE LOCATION

Site Name Page

TERRESTRIAL FOOD CROP

(Agricultural Crops)

Almond 3
Apple 3
Banana 3
Beans 4
Broccoli 4
Brussels Sprouts 4
Cabbage 4
Cauliflower 4
Corn 5
Cotton 8
Cucumber 10
Dill 10
Lentils 10
Nectarines 10
Okra 10
Peach 11
Peanuts 11
Pear 13
Peas 10
Plum 13
Prune 13
Pumpkin 10
Radish 13
Rutabagas 14
Sorghum (grain) 15

TABLE OF CONTENTS TO SITE LOCATION

Site Name Page

Soybeans 15

Sugar Beets 16

Sweet Potato 16

TERRESTRIAL NON-FOOD CROP

(Ornamental Plants and Forest Trees)

Cottonwood (including nursery stock) 24

Elm 24

Golf Course Turf 28

Lawns 28

Ornamental Deciduous Trees 25

Ornamental Evergreens 25

Ornamental Herbaceous Plants 25

Ornamental and/or Shade Trees 25

Ornamental Turf 28

Ornamental Woody Shrubs 25

Ornamental Woody Vines 25

Ornamental Plants (nursery stock) 26

Pine 26

Prunus 26

(Noncrop, Wide Area, and General Indoor/Outdoor Treatments)

Noncrop Areas (including compsites, paths, picnic areas, recreational areas, roadsides, and trails) 30

Recreational Areas 32

Residential Areas 43

Uncultivated Nonagricultural Areas 30

TABLE OF CONTENTS TO SITE LOCATION

Site Name — Page

DOMESTIC OUTDOOR

(Ornamental Plants and Forest Trees)

Lawns 28
Also refer to TERRESTRIAL NON-FOOD CROP (Ornamental Plants) 24

(Household)

Domestic Dwellings (Outdoor) 39

(Wood or Wood Structure Protection Treatments)

Terrestrial Structures 43

AQUATIC NON-FOOD CROP

(Aquatic Sites)

Aquatic Areas 32

Catch Basins 34

Cesspools 34

Flooded Areas (including flooded noncrop areas) 32

Industrial Waste Water Impoundments 35

Intermittently Flooded Areas (including culverts, open sheet catch basins, rain barrels, hollow stumps, temporary rain pools, tree holes, woodland pools) 32

Log Ponds 32

Septic Tanks 34

Sewage Systems (including sewage ponds and waste disposal ponds and lagoons) 35

Stagnant Water 32

Standing Water 32

FORESTRY

Pine (including Southern Pines) 31

TABLE OF CONTENTS TO SITE LOCATION

Site Name — Page

INDOOR

(Processed or Manufactured Products, and Food or Feed Containers or Dispensers)

Storage Bins (Empty) 50

(Pets and Domestic Animals)

Beef Cattle 17

(Animals and Their Man-Made Premises)

Dogs 23

Dog Kennels 21

Horse Stables 20

Pet Bedding 21

Pet Quarters 21

Turkey Pen 19

(Agricultural Premises and Equipment)

Farm Buildings 20

Greenhouse Bench 21

Nursery Bench 21

Potting Media 21

Potting Soil 21

(Household)

Domestic Dwellings (Indoor) 35

(Wood or Wood Structure Protection Treatments)

Terrestrial Structures 43

(Commercial and Industrial Uses)

Commercial, Institutional, and Industrial Areas (Indoor, areas other than edible product areas) 54

Commercial Transportation Facilities (Indoor, edible product areas) 51

TABLE OF CONTENTS TO SITE LOCATION

Site Name Page

Commercial Transportation Facilities (Indoor, areas other than edible product areas) 54

Eating Establishments (Indoor, edible product areas) 51

Eating Establishments (Indoor, areas other than edible product areas) 54

Food Handling Establishments (Indoor, edible product areas) 51

Food or Grocery Marketing Storage Plants/Areas (Indoor, areas other than edible product areas) 54

Food Processing, Handling, and Storage Plants/Areas (Indoor, edible product areas) 51

Food Processing, Handling, and Storage Plants/Areas (Indoor, areas other than edible product areas) 54

Hospitals (Indoor, edible product areas) 35

Telephone Pedestals (buried) 57

II. REQUIREMENT FOR SUBMISSION OF GENERIC DATA

A. This portion of the guidance document is a Notice issued under the authority of FIFRA Section 3(c)(2)(B) and describes, in table format, the data required for maintaining the registrability of each product. Additionally, a bibliography (Appendix II-1) is included that identifies that data considered as part of the data base supporting this standard. EPA has determined that additional generic data described in this Notice must be submitted to EPA for evaluation in order to maintain in effect the registration(s) of your product(s) identified as an attachment to the cover letter accompanying this guidance document. As required by FIFRA Section 3(c)(2)(B), you are required to take appropriate steps to comply with this Notice.

EPA may suspend the registration of each of those products unless, within the specified time, you have informed EPA how you will satisfy the requirements of this Notice. Any such suspension will remain in effect until you have complied with the terms of this Notice.

B. What Generic Data [1] Must Be Submitted. You may ascertain which generic data you must submit by consulting Table A at the end of this chapter. That table shows all the generic data needed to evaluate the continued registrability of all products, and the dates by which the data must be submitted. The required data must be submitted and any necessary studies must be conducted in accordance with EPA-approved protocols, the Pesticide Registration Guidelines [2], or data collected under the approved protocols of the Organization for Economic Cooperation and Development (OECD). If you wish not to develop data which are necessary to support the registration or reregistration of certain uses appearing in your labeling, you may delete those uses at the time you submit your revised labeling.

Also for certain kinds of testing (generally ecological effects), EPA requires the test substance to be a "typical formulation," and in those cases EPA needs data of that type for each major formulation category (e.g., emulsifiable concentrates, wettable powders, granulars, etc.) These are classified as generic data and when needed are specified in Table A EPA may possess data on certain "typical formulations" but not others. Note: The "typical formulation" data should not be confused with product-specific data (Table B) which are required on each formulation. Product-specific data are further explained in Chapter IV of this document.

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[1] Generic data pertain to the properties or effects of a particular ingredient, and thus are relevant to an evaluation of the risks of all products containing that ingredient (or all such products having a certain use pattern), regardless of any such product's unique composition or use. Product-specific data relate only to the properties or effects of a product with a particular composition (or a group of products with closely similar composition).

[2] The Pesticide Registration Guidelines were reproposed on November 24, 1982 in 47 Federal Register 53192.

C. Options Available for Complying With Requirements to Submit Data

Within 90 days of your receipt of this Notice you must submit to EPA a completed copy of the form entitled "FIFRA Section 3(c)(2)(B) Summary Sheet" [EPA Form 8580-1, Appendix II-2] for each of your products. On that form you must state which of the following methods you will use to comply with the requirements of this Notice:

1. (a) Notify EPA that you will submit the data, and

   (b) either submit the existing data you believe will satisfy the requirement, or state that you will generate the data by conducting testing. If the test procedures you will use deviate from (or are not specified in) the Registration Guidelines or protocols contained in the Reports of Expert Groups to the Chemicals Group, Organization for Economic Cooperation and Development (OECD) Chemicals Testing Programme, you must enclose the protocols you will use.

2. Notify EPA that you have entered into an agreement with one or more other registrants to jointly develop (or share in the cost of developing) the data. If you elect this option, you must notify EPA which registrant(s) are parties to the agreement.

3. File with EPA a completed "Certification of Attempt to Enter Into an Agreement With Other Registrants for Development of Data" (EPA Form 8580-6, Appendix II-3)*/

4. Request that EPA amend your registration by deleting the uses for which the data are needed. (This option is not available to applicants for new products.)

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*/ FIFRA Section 3(c)(2)(B) authorizes joint development of data by two or more registrants, and provides a mechanism by which parties can obtain an arbitrator's decision if they agree to jointly develop data but fail to agree on all the terms of the agreement. The statute does not compel any registrant to agree to develop data jointly.
(Footnote continued at bottom of next page)

5. Request voluntary cancellation of the registration(s) of your products for which the data are needed. (This option is not available to applicants for new products.)

D. Procedures for Requesting Changes in Testing Methodology and Extensions of Time

EPA recognizes that you may disagree with our conclusions regarding the appropriate ways to develop the required data or how quickly the data must be submitted. If the test procedures you plan to use deviate from (or are not specified in) the registration guidelines or protocols contained in the reports of the Expert Groups to the Chemical Groups, Organization for Economic Cooperation and Development (OECD) Chemicals Testing Programme, you must submit the protocol for Agency review prior to the initiation of the test.

If you think that you will need more time to generate the required data than is allowed by EPA's schedule, you may submit a request for an extension of time. The extension request must be submitted in writing to the Product Manager. The extension request should state the reasons why you conclude that an extension is appropriate. While EPA considers your request, you must strive to meet the deadline for submitting the required data.

(Footnote continued from previous page)

In EPA's opinion, joint data development by all registrants who are subject to the requirements to submit a pertinent item of data or a cost-sharing agreement among all such registrants is clearly in the public interest. Duplication of testing could increase costs, tie up testing facilities, and subject an unnecessarily large number of animals to testing.

As noted earlier, EPA has discretion not to suspend the registration of a product when a registrant fails to submit data required under FIFRA Section 3(c)(2)(B). EPA has concluded that it is appropriate to exercise its discretion not to suspend in ways which will discourage duplicative testing. Accordingly, if (1) a registrant has informed us of its intent to develop and submit data required by this Notice; and (2) a second registrant informs EPA that it has made a bona fide offer to the first registrant to share in the expenses of the testing [on terms to be agreed upon or determined by arbitration under FIFRA Section 3(c)(2)(B)(iii)]; and (3) the first registrant has declined to agree to enter into a cost-sharing agreement, EPA will not suspend the second firm's registration. While the first firm is not required to agree to jointly develop data, EPA is not required to force the second firm to engage in economically inefficient duplicative testing in order to maintain its registration.

III. REQUIREMENT FOR SUBMISSION OF PRODUCT-SPECIFIC DATA

Note: This Section applies only to manufacturing-use products, not end-use products.

A necessary first step in determining which statements must appear on your product's label is the completion and submission to EPA of product-specific data* listed on the form entitled "Product Specific Data Report" (EPA Form 8580-4, Appendix III-1) to fill "gaps" identified by EPA concerning your product. Under the authority of FIFRA Section 3(c)(2)(B), EPA has determined that you must submit these data to EPA in order to register or reregister your product(s). All of these data must be submitted not later than six months after you receive this guidance document.

"Product-Specific Data Requirements for Manufacturing-Use Products" appearing in Table B permit you to determine which product-specific data you must submit. This can be done by examining the entries in the column of those tables entitled "Must Data Be Submitted Under §3(c)(2)(B)."

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*/ Product specific data pertains to data that support the formulation which is marketed; it usually includes product chemistry data and acute toxicology data.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

§158.120 - PRODUCT CHEMISTRY

Guideline Citation and Name of Test	Test Substance[1]	Guidelines Status	Are Data Required[2,3] Yes	Are Data Required[2,3] No	Footnote Number
Product Identity:					
61-1 - Identity of Ingredients	TGAI	R	☒	☐	
61-2 - Statement of Composition	TGAI	R	☒	☐	
61-3 - Discussion of Formation of Ingredients	TGAI	R	☒	☐	
Analysis and Certification of Product Ingredients					
62-1 - Preliminary Analysis	TGAI	CR	☒	☐	
62-2 - Certification of Limits	TGAI	R	☒	☐	
62-3 - Analytical Methods for Enforcement of Limits	TGAI	R	☒	☐	
Physical and Chemical Characteristics					
63-2 - Color	TGAI	R	☒	☐	
63-3 - Physical State	TGAI	R	☒	☐	
63-4 - Odor	TGAI	R	☒	☐	
63-5 - Melting Point	TGAI	R	☒	☐	
63-6 - Boiling Point	TGAI	R	☐	☒	

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

§158.120 - PRODUCT CHEMISTRY (Con't)

Guideline Citation and Name of Test	Test Substance[1]	Guidelines Status	Are Data Required[2,3]		Footnote Number
			Yes	No	
Physical and Chemical Characteristics (Continued)					
63- 7 - Density, Bulk Density, or Specific Gravity	TGAI	R	☒	☐	
63- 8 - Solubility	TGAI or PAI	R	☒	☐	
63- 9 - Vapor Pressure	PAI	R	☒	☐	
63-10 - Dissociation constant	PAI	R	☒	☐	
63-11 - Octanol/water partition coefficient	PAI	R	☒	☐	
63-12 - pH	TGAI	R	☒	☐	
63-13 - Stability	TGAI	R	☒	☐	
63-20 - Corrosion Characteristics	TGAI	R	☒	☐	
Other Requirements:					
64- 1 - Submittal of samples	Choice	CR	☐	☒	

1. Test Substance: TGAI = Technical grade of the active ingredient; PAI = Pure active ingredient; C = Either substance.
2. If current data has been submitted to the Agency, the registrant should reference or resubmit it.
3. Data must be submitted by MAR 1985

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirements	Composition[1]	Does EPA Have Data To Satisty This Requirement? (Yes, No, or Partially)	Bibliographic Citation †	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.125 Residue Chemistry				
171-4 - Nature of Residue (Metabolism)				
- Plants	PAIRA	Partially	0100001, 0100002 0100003, 0100004 0100005	Yes[3]
- Livestock	PAIRA and plant	Partially	0100006, 0100007 0100008, 0100009 0100010, 0100011 0100012, 0100013 0100014, 0100015 0100016, 0100017 0100018, 0100019 0100020, 0100021 0100022, 0100023 0100024	Yes[4]
171-4 - Residue Analytical Method				
- Plant residues	TGAI and metabolites	Yes	0100026, 0100028 0100029, 0100030 0100036, 0100037 0100038, 0100039 0100041, 0100042 0100043, 0100044 0100045, 0100046 0100047, 0100048 0100049, 0100050 0100051, 0100053 0100055	No[5]

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† In all data tables, data citations with seven digits are preceeded by a "GS" in the bibliography.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.125 Residue Chemistry (continued)				
171-4 - Residue Analytical Method (continued)				
- animal residues	TGAI and metabolites	Yes	0100025, 0100027 0100031, 0100032 0100033, 0100034 0100035, 0100040 0100052, 0100054	No[5]
171-4 - Storage Stability Data	PAI	Yes	0100056, 0100057 0100058, 0100059 0100060, 0100061 0100062, 0100063 0100064, 0100065 0100066, 0100067 0100068, 0100069 0100070	No
171-4 - Magnitude of the Residue - Residue Studies (continued)				
- Root and Tuber Vegetable Group	TEP	No		Yes[6]
Radishes	TEP	Yes	0100071, 0100072 0100073	No
Rutabagas	TEP	Yes	0100074	No
Sugar Beets	TEP	Yes	0100075, 0100076	No

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.125 Residue Chemistry (continued)				
171-4 - Magnitude of the Residue - Residue Studies (continued)				
- Brassica (Cole) Leafy Vegetable Group (continued)				
Cauliflower	TEP	Partially	0100089	Yes[15]
- Legume Vegetables Group	TEP	No		Yes[16]
Cowpeas	TEP	Yes	0100090	No[17]
Dry beans (including black-eyed peas, kidney beans, and navy beans)	TEP	Partially	0100090	Yes[17]
Lentils	TEP	Partially	0100090	Yes[17]
Lima beans	TEP	Partially	0100091	No[18]
Peas	TEP	Partially	0100090	Yes[17]
Snap beans (including green, string, wax, and pole)	TEP	Partially	0100092	Yes[19]
Soybeans	TEP	Partially	0100093	Yes[20]

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.125 Residue Chemistry (continued)				
171-4 - Magnitude of the Residue - Residue Studies (continued)				
- Brassica (Cole) Leafy Vegetable Group (continued)				
Cauliflower	TEP	Partially	0100089	Yes[15]
- Legume Vegetables Group	TEP	No		Yes[16]
Cowpeas	TEP	Yes	0100090	No[17]
Dry beans (including black-eyed peas, kidney beans, and navy beans)	TEP	Partially	0100090	Yes[17]
Lentils	TEP	Partially	0100090	Yes[17]
Lima beans	TEP	Partially	0100091	No[18]
Peas	TEP	Partially	0100090	Yes[17]
Snap beans (including green, string, wax, and pole)	TEP	Partially	0100092	Yes[19]
Soybeans	TEP	Partially	0100093	Yes[20]

TABLE A
GENERIC DATA REQUIREMENTS FO[illegible]LORPYRIFOS

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.125 Residue Chemistry (continued)				
171-4 - Magnitude of the Residue - Residue Studies (continued)				
- Foliage of the Legume Vegetable Group	TEP	No		Yes[21]
Bean forage and hay	TEP	Partially	0100090	Yes[22]
Cowpea forage and hay	TEP	Yes	0100090, 0100091, 0100092	No[23]
Lentil forage and hay	TEP	Yes	0100090, 0100091, 0100092	No[23]
Lima bean forage and hay	TEP	Yes	0100091	No[24]
Pea forage and hay	TEP	Yes	0100090	No[25]
Snap bean forage and hay	TEP	Yes	0100092	No[24]
Soybean forage, hay, and straw	TEP	Partially	0100093	Yes[26]
- Fruiting Vegetable (except cucurbits) Group	TEP	No		Yes[27]
Peppers	TEP	Partially	0100094	Yes[27]

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.125 Residue Chemistry (continued)				
171-4 - Magnitude of the Residue - Residue Studies (continued)				
- Fruiting Vegetables (except cucurbits) Group (con't)	TEP			
Tomatoes	TEP	Yes	0100095	No
- Cucurbit Vegetable Group	TEP	No		Yes[28]
Cucumbers	TEP	Yes	0100096	No
Pumkins	TEP	Yes	0100097	No
- Citrus Fruits Group	TEP	Yes		No
Citrus Fruits	TEP	Yes	0100098, 0100099 0100100	No
- Pome Fruits Group	TEP	No		Yes[29]
Apples	TEP	Yes	0100100, 0100090 0100101	No
Pears	TEP	Yes	0100100	No
- Stone Fruits Group	TEP	No		Yes[30]
Cherries	TEP	Yes	0100102, 0100103	No

TABLE A

GENERIC DATA REQUIREMENTS F[illegible]LORPYRIFOS

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.125 Residue Chemistry (continued)				
171-4 - Magnitude of the Residue - Residue Studies (continued)				
- Stone Fruits Group (con't)	TEP			
Nectarines	TEP	Yes	0100104, 0100105 0100106	No
Peaches	TEP	Yes	0100104, 0100105 0100106	No
Plums (fresh prunes)	TEP	Yes	0100107	No
- Small Fruits and Berries Group	TEP	No		Yes[31]
Cranberries	TEP	Partially	0100108	Yes[32]
Grapes	TEP	Yes	0100109	No
Strawberries	TEP	Partially	0100110	Yes[33]
- Tree Nut Group	TEP	No		Yes[34]
Almonds	TEP	Yes	0100102, 0100111	No
Walnuts	TEP	Yes	0100102, 0100112	No

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.125 Residue Chemistry (continued)				
171-4 - Magnitude of the Residue - Residue Studies (continued)				
- Cereal Grains Group	TEP	No		Yes[35]
Corn (fresh and grain)	TEP	Yes	0100113, 0100114 0100115, 0100116	No[35]
Sorghum grain	TEP	Partially	0100117, 0100118	Yes[36]
- Forage, Fodder, and Straw of Cereal Grains Group	TEP	No		Yes[37]
Corn forage and fodder	TEP	Yes	0100113, 0100114 0100115	No
Sorghum forage and fodder	TEP	Partially	0100119	Yes[38]
- Non-grass Animal Feeds Group	TEP	No		Yes[39]
Alfalfa, green forage and hay	TEP	Partially	0100120	Yes[40]
- Herbs and Spices Group	TEP	No		Yes[41]
Dill	TEP	Yes	0100090, 0100091 0100092	No[42]

TABLE A
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§158.125 Residue Chemistry (continued)				
171-4 - Magnitude of the Residue - Residue Studies (continued)				
- **Miscellaneous Commodities**				
Bananas	TEP	Partially	0100121	Yes[43]
Cottonseed	TEP	Partially	0100122, 0100123 0100124	Yes[44]
Figs	TEP	Partially	0100125	Yes[45]
Kiwi Fruit	TEP	Yes	0100126	No
Mint	TEP	Yes	0100127	No
Okra	TEP	No	-	Yes[46]
Peanuts	TEP	Yes	0100128,0100129 0100130,0100131	No
Sunflower seed	TEP	Yes	0100132	No
Tobacco	TEP	Yes	00030504	No

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.125 Residue Chemistry (continued)				
171-4 - Magnitude of the Residues in Food-producing animals				
Fat, meat, and meat by-products of cattle, goats hogs, horses, and sheep	TGAI or plant/animal metabolites	Yes	0100134, 0100135 0100136, 0100137 0100138, 0100139 0100140, 0100141 0100142, 0100143 0100144, 0100145 0100146, 0100147	No[47]
Milk	TGAI or plant metabolites	Yes	0100148, 0100149 0100150, 0100151	No[47]
Poultry and Eggs	TGAI or plant metabolites	Yes	0100152, 0100153 0100154, 0100155 0100156, 0100157	No[47]
- Food Handling Establishments	TEP	Yes	0100158, 0100159 0100160, 0100161 0100162, 0100163	No

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1. Composition: TGAI = Technical grade of the active ingredient; PAIRA = Pure active ingredient, radiolabelled; TEP = Typical end-use product; EP = End-use product.

2. Data must be submitted no later than MAR. 1986.

3. Studies must be submitted concerning the metabolism of ring-labeled $[^{14}C]$chlorpyrifos and metabolites, especially TCP, by corn and a representative legume and root crop. Radioactive residues must be characterized by a method such as GC or HPLC and verified by MS.

TABLE A
GENERIC DATA REQUIREMENTS FO LORPYRIFOS

§158.125 Residue Chemistry
(continued)

4. Metabolism studies must be submitted utlizing ruminants and poultry. Residues of parent and metabolites, especially TCP, must be characterized and quantified in muscle, fat, kidney, and liver of beef cattle 14 days after an animal dip treatment with ring-labeled [^{14}C] at a rate equivalent to 0.5 gal. of the 23.7% EC product/300 gal. of water. Poultry must be dosed with ringlabeled [^{14}C]chlorpyrifos at 5.5 ppm in the diet for three days. Eggs must be sampled twice daily throughout the dosing period. Animals must be sacrificed within 24 hours of the final dose and residues characterized and quantified in eggs, muscle, fat, gizzard, heart, liver, and skin.

5. If the requested metabolism studies in plants and animals identify other metabolite residues of toxicological concern, then additional methodology may be needed.

6. The crop group tolerance is not appropriate because data are required for two additional members of this crop group (carrots and potatoes). The sweet potato tolerance (0.1 ppm) differs significantly (greater than a factor of five) from tolerances covering other group members.

7. Additional data are required for residues in or on sweet potatoes 90 days following a single broadcast soil application with either the 15% G or the 4 lb/gal EC formulation at 2 lb ai/A. These tests must be conducted in CA, LA, and NC. Alternatively, the registrant may propose a 125-day PHI.

8. Additional data are required for residues in or on turnip roots reflecting a single at-plant soil application with either the 15% G or 4 lb/gal EC formulation at 2.25 lb ai/A. Tests must be conducted in TX and GA. Residues in or on turnip roots 30 days following a single directed spray to plant bases (immediately after transplanting) with the 4 lb/gal EC formulation at 2.25 lb ai/A. Tests must be conducted in the sites listed above.

9. The crop group tolerance is not adequately supported because additional data are required for turnip greens. Additional data are required for residues in or on turnip greens reflecting a single at-plant soil application with either the 15% G or 4 lb/gal EC formulation at 2.25 lb ai/A. Tests must be conducted in TX and GA. Residues in or on turnip greens 30 days following a single directed spray to plant bases (immediately after transplanting) with the 4 lb/gal EC formulation at 2.25 lb ai/A. Tests must be conducted in the sites listed above.

10. This crop group tolerance is not adequately supported because residue data are required for one additional member of the crop group (garlic, leek, or shallot).

11. This crop group tolerance is not adequately supported because residue data are required for one additional commodity (mustard greens). Data gaps exist for broccoli and cabbage.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

§158.125 Residue Chemistry
(continued)

12. Additional residue data reflecting a single at-planting soil treatment using the 15% G or 4 lb/gal EC at 1.38 oz ai/1,000 feet of row with a 20-inch row spacing (2.25 lb ai/A) are required. Tests must be conducted in CA. Also residue data at 30 days post treatment reflecting a single application to the soil at transplanting employing 4 lb/gal EC formulation at 1.38 oz ai/1,000 feet of row with a 20-inch row spacing (2.25 lb ai/A) are needed. Tests must be conducted in CA.

13. Additional residue data reflecting a single at-planting soil treatment using the 15% G or 4 lb/gal EC at 1.38 oz ai/1,000 feet of row are required. Tests must be conducted in NY, FL, TX, CA, and WI. Also residue data at 30 days post treatment reflecting a single application to the soil at transplanting employing the 4 lb/gal EC formulation at 1.38 oz ai/1,000 feet of row with a 20-inch row spacing (2.25 lb ai/A) are needed. Tests must be conducted in the sites listed above.

14. Additional residue data reflecting a single at-planting soil treatment using the 15% G or 4 lb/gal EC at 1.38 oz ai/1,000 feet of row are required. Tests must be conducted in CA, FL, HI, and NJ. Also residue data at 30 days post treatment reflecting a single application to the soil at transplanting employing the 4 lb/gal EC formulation at 1.38 oz ai/1,000 feet of row with a 20-inch row spacing (2.25 lb ai/A). Tests must be conducted in the sites listed above.

15. Additional residue data reflecting a single at-planting soil treatment using the 15% G formulation at 1.38 oz ai/1,000 feet of row with a 20-inch row spacing (2.25 lb ai/A) or the 4 lb/gal EC formulation at 1.2 oz ai/1,000 feet of row (2 lb ai/A with a 20-inch row spacing) are required. Tests must be conducted in CA and MI or NY and OR. Also residue data at 30 days post treatment reflecting a single application to the soil at transplanting employing 4 lb/gal EC formulation at 1.2 oz ai/1,000 feet of row are needed. Tests must be conducted in the sites listed above.

16. This crop group tolerance is not adequately supported because residue data are required for snap beans and soybeans. Tolerances for residues in or on various members of this group differ by a factor of more than five. The use pattern is much different for soybeans (seed treatment, at-planting, and foliar treatments) than for other legumes (seed treatment only).

17. A separate tolerance of 0.1 ppm should be established for residues on these commodities since the seed and pod vegetable group, to which these crops were included, is now obsolete (FR 48:29855).

18. The present tolerance is not supported because residue data for lima bean cannery waste (a processed commodity) were not submitted. However, similar data requested for snap beans can be translated to lima beans to satisfy this data requirement.

TABLE A
GENERIC DATA REQUIREMENTS FO HLORPYRIFOS

§158.125 Residue Chemistry (continued)

19. The following data are required: a. Residue data from snap bean (pod plus seeds) samples taken at maturity from plants raised from seed treated at 1 oz ai/100 lb seed with one of the WP formulations in OR. b. Residue data concerning cannery residue, remaining after processing of snap bean pods having measurable, weatherd residues as a result of being grown from treated seed. Exaggerated application rates may be required to obtain residue values at or near the tolerance level.

20. Residue data from soybeans harvested 28 and 40 days following the last of six aerial and ground foliar applications of the 4 lb/gal EC at 0.5 lb ai/A which had been preceded by an at-planting or early postemergence application of the 15% G at 1.3 lb ai/A. The studies must be conducted in IL, MN, and MS.

21. This crop group tolerance is not adequately supported because residue data are required for field peas and the data requirements for soybeans must be satisfied.

22. Residue data from dried hay, harvested at its normal time of maturity, from plants grown from seed treated at 1 oz ai/100 lb seed with the 25 or 50% WP. The studies must take place in NY, OR, CA, WI, MI, and ND to account for the major growing areas of all major legumes, since the data will be translated to hay for the following crops: peas, lentils, cowpeas, snap beans, and lima beans.

23. Tolerances for cowpea hay and forage, and lentil hay and forage must be proposed, since they are raw agricultural commodities of cowpeas and lentils. Alternatively, the petitioner could satisfy the requirements for a crop group tolerance for the Foliage of Legume Vegetable Group.

24. The tolerance for lima bean forage and snap bean forage must be revoked, since an identical tolerance exists for bean forage.

25. The residue data requested for bean hay will be translated to pea hay and will be adequate to allow proposal of a tolerance for pea hay.

26. Residue data from soybean forage and straw harvested 14 and 28 days respectively following the last of six 0.5 lb ai/A foliar applications of the 4 lb/gal EC using aerial and ground equipment must be obtained. Residues in or on hay must also be determined. The studies must be conducted in IL, MN, MO, and AR. Residue data from soybean forage and soybean straw, obtained at their normal maturity from plants treated at-planting with a soil application of the 15% G at 1.3 lb ai/A must be obtained. The studies must be conducted in IL, MN, and MS.

27. This crop group tolerance is not adequately supported because residue data are required for peppers. Residue data are required involving application(s) of the 4 lb/gal EC formulation on peppers at 0.85% lb ai/A from field tests conducted in Israel using a PHI of 5 days and as normally grown for export to the U.S.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

§158.125 Residue Chemistry (continued)

28. This crop group tolerance is not adequately supported because residue data are required for two additional commodities (cantaloupe or muskmelon and squash).

29. The crop group tolerance is not adequately supported because the registered use patterns for the two required, representative crops (apples and pears) are highly dissimilar and the tolerances for the residues in or on apples and pears differ by a factor greater than five.

30. This crop group tolerance is not adequately supported because the established tolerance for chlorpyrifos residues in or on cherries differs by a factor greater than five from established tolerances for resides for the other members of this group.

31. The crop group tolerance is not adequately supported because residue data are required for two additional members of this group (Blueberries, and a Rubus spp.). Additional data are required to support the currently established tolerances for residues in or on strawberries and cranberries.

32. Studies must be conducted in OR and WA to provide residue data from ripe cranberries harvested from plants treated twice with the 4 lb/gal EC at 1.5 lb ai/A as aerial-applied, foliar sprays.

33. Residue data from studies conducted in CA from mature strawberries, harvested from plants foliarly treated at 1 lb ai/A(4 lb/gal EC) when buds first appear and again 10-14 days later are required. Residue data from mature strawberries harvested from plants which had been planted and treated the previous year with the 4 lb/gal EC at 2 lb ai/A as a preplant, soil treatment are needed. In the same studies, a group of plants should also receive two foliar treatments at 1 lb ai/A as described in the above data gap, to determine the effect of the combination of uses in the first year of fruit production. The studies must take place in OR or WA as well as ID.

34. This crop group tolerance is not adequately supported because residue data are required for an additional commodity (pecans) of this crop group.

35. This crop group tolerance is not adequately supported because the established tolerance for chlorpyrifos residues in or on fresh corn and corn grain differs by a factor greater than five from established tolerances for residues of sorghum and that proposed for wheat. Data are required for two additional members of this crop group (rice and wheat). Additional data are required for the representative commodity sorghum.

§158.125 Residue Chemistry
(continued)

36. The following additional data are required: a. Residue data reflecting three foliar treatments, applied at 3-day intervals, of the 4 lb/gal EC formulation at 0.25 lb ai/A. Treatments must begin when 50% of the seed heads are in bloom. Both aerial and ground application data are required. Tests must be conducted in KS. b. Residue data from FL reflecting an at-planting application of the 15% G formulation (state label no. FL820030) applied as a band over the row and incorporated at 2 lb ai/A with a 30-inch row spacing. This application must be followed by foliar applications of the 4 lb/gal EC formulation as described in the data gap above. c. Residue data from TX reflecting the following successive treatments: (i) seed treatment with the 50% WP formulation (state label no. TX 810001) at 1-2 oz ai/100 lb of seed; (ii) at-planting application of the 15% G formulation (state label no. TX820021) applied as a band over the row and incorporated at 1.3 lb ai/A with a 30-inch row spacing; and (iii) foliar applications of the 4 lb/gal EC formulation as described in the first data gap presented here.

37. This crop group tolerance is not adequately supported because the established tolerance for chlorpyrifos residues in or on corn forage differs by a factor greater than five from established tolerances for resides of sorghum forage. Data are required for an additional member of this crop group (wheat). Additional data are required for the representative commodity sorghum.

38. The following additional data are required: a. Residue data reflecting three foliar treatments, applied at 3-day intervals, of the 4 lb/gal EC formulation at 0.25 lb ai/A. Treatments must begin when 50% of the seed heads are in bloom. Both aerial and ground application data are required. Tests must be conducted in KS. Forage should be cut and analyzed 14 days after the last treatment. Also forage (green plants) cut 14 days after the last application and dried for fodder and ensiled for silage must also be analyzed for residues. b. Residue data from FL reflecting an at-planting application of the 15% G formulation (state label no. FL820030) applied as a band over-the-row and incorporated at 2 lb ai/A with a 30-inch row spacing. This application should be followed by foliar applications of the 4 lb/gal EC formulation as described in the data gap above. Plants must be harvested 14 days after the final treatment and analyzed immediately (forage), and following drying for fodder and ensiling for silage. c. Residue data from TX reflecting the following successive treatments: (i) seed treatment with the 50% WP formulation (state label no. TX 810001) at 1-2 oz ai/100 lb of seed; (ii) at-planting application of the 15% G formulation (state label no. TX820021) applied as a band over the row and incorporated at 1.3 lb ai/A with a 30-inch row spacing; and (iii) foliar applications of the 4 lb/gal EC formulation as described in the first data gap presented here. Plants must be harvested 14 days after the final treatments and analyzed immediately (forage), anb following drying for fodder and ensiling for silage. Alternatively, the registrant may propose a feeding and grazing restriction for forage and fodder.

39. This crop group tolerance is not adequately supported because residue data are required for an additional commodity (clover) of this crop group. Additional data are required to support the established tolerance for alfalfa.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

§158.125 Residue Chemistry
(continued)

40. Additional data are required for the following: a. Data reflecting combined residues of chlorpyrifos and TCP in or on alfalfa forage and hay 14 days after the fourth aerial application of the 4 lb/gal EC at 0.5 lb ai/A and 21 days after the fourth aerial application of the 4 lb/gal EC at 1 lb ai/A. Cuttings must be made after each application. Additional data should also reflect the level of residues of chlorpyrifos and TCP reflecting the maximum use in the individual cuttings. b. A processing study to determine residues in meal processed from field-treated hay containing detectable weathered residues; if residues are found to concentrate in meal, a feed additive tolerance must be proposed.

41. This crop group tolerance is not adequately supported because residue data are required for additional commodities of this crop group (basil, chives, marjoram, and sage).

42. The residue data for chlorpyrifos on beans, peas, and lentils can be translated to dill.

43. Information for regulatory purposes (representative labels, English translation of labels etc.) must be collected and submitted on chlorpyrifos usage on bananas in countries which export bananas to the U.S.

44. Data must be submitted reflecting residues in or on cottonseed at harvest following five applications. Data for both aerial and ground applications must be presented. These tests must be conducted in CA.

45. Data must be submitted reflecting residues in or on fresh figs 7 months following soil application of the 4 lb/gal EC formulation at 2 lb ai/A. Tests must be conducted in CA. Residue data should be submitted on dried figs processed for fresh figs which were treated at the maximum recommended use rate; if residues are found to concentrate in dried figs, an appropriate food additive tolerance must be proposed.

46. The tolerance for okra as a member of the seed and pod vegetable must be eliminated. None of the submitted residue data for chlorpyrifos can be translated to okra. If the petitioner desires to establish a seed-treatment use for okra identical to the currently registered use, the following residue data will be required:
a. Residue data from okra pods harvested at the time of their normal maturity, obtained from plants grown from seed treated at 1 oz ai/100 lb seed (50% WP). The studies must take place in TX and GA.

47. Metabolism studies of chlorpyrifos in animals are required. Should the metabolites of concern differ from those currently sought and reported here, additional data will be required.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition^1	Use Pattern^2	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?^{3}
§158.130 Environmental Fate					
DEGRADATION STUDIES-LAB:					
161-1 - Hydrolysis	TGAI or PAIRA	A,B,D,F,G,H	No	-	Yes^4
Photodegradation					
161-2 - In water	TGAI or PAIRA	A,B,D,G	No	-	Yes^4
161-3 - On soil	TGAI or PAIRA	A	No	-	Yes^4
161-4 - In Air	TGAI or PAIRA	A,B,F,G	No	-	Yes^4
METABOLISM STUDIES-LAB:					
162-1 - Aerobic Soil	TGAI or PAIRA	A,B,G	Yes	00073059,00095381 00025619	No
162-2 - Anaerobic Soil	TGAI or PAIRA	A	Yes	00025619	No
162-3 - Anaerobic Aquatic	TGAI or PAIRA	D,G	No	-	Yes^3
162-4 - Aerobic Aquatic	TGAI or PAIRA	D	No	-	Yes^3
MOBILITY STUDIES:					
163-1 - Leaching and Adsorption/Desorption	TGAI or PAIRA	A,B,F,G,H	No	-	Yes^4
163-2 - Volatility (Lab)	TEP	A,F,G,I*	No	-	Yes^4
163-3 - Volatility (Field)	TEP	A,F,I	No	-	Yes^4

* Plus commercial establishments, pet/animal housing.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3]
§158.130 Environmental Fate (continued)					
DISSIPATION STUDIES-FIELD:					
164-1 - Soil	TEP	A,B,G,H	No	-	Yes[3]
164-2 - Aquatic (Sediment)	TEP	D	No	-	Yes[3]
164-3 - Forestry	TEP	G	No	-	Yes[3]
164-4 - Combination and Tank Mixes		-	N/A	-	No[5]
164-5 - Soil, Long-term	TEP	A	Yes	00025619,00095381 00073059	No[6]
ACCUMULATION STUDIES:					
165-1 - Rotational Crops (Confined)	PAIRA	A	No	-	Yes[3]
165-2 - Rotational Crops (Field)	TEP	A	No	-	Yes[3]
165-3 - Irrigated Crops	TEP	D	No	-	Yes[3]
165-4 - In Fish	TGAI or PAIRA	A,B,D,G,H	No	-	Yes[3]
165-5 - In Aquatic Non-Target Organisms	TEP	A,B,D,G,H	No	-	Yes[3]

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

§158.130 Environmental Fate
(continued)

1. Composition: TGAI = Technical grade of the active ingredient; PAIRA = Pure active ingredient, radiolabelled; TEP = Typical end-use product.
2. The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food; C=Aquatic, Food Crop; D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.
3. Data must be submitted no later than OCT 1986.
4. Data must be submitted no later than MAR 1985.
5. This Guidance Document deals only with single active ingredients.
6. The data which were submitted for aerobic soil metabolism meet this requirement.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Use Patterns[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3]
§158.135 Toxicology					
ACUTE TESTING:					
81-1 - Acute Oral - Rat	TGAI	A,B,D,F,H,I	Yes	00046543	No
81-2 - Acute Dermal	TGAI	A,B,D,F,H,I	Yes	00046543	No
81-3 - Acute Inhalation - Rat	TGAI	A,B,D,F,H,I	No		Yes[4]
81-7 - Acute Delayed Neurotoxicity - Hen	TGAI	A,B,D,F,H,I	Yes	00095250	No
SUBCHRONIC TESTING:					
82-1 - 90-Day Feeding - Rodent, Non-rodent	TGAI	-	No		No[5]
82-2 - 21-Day Dermal	TGAI	-	N/A		No
82-3 - 90-Day Dermal	TGAI	-	N/A		No
82-4 - 90-Day Inhalation - Rat	TGAI	B,I	No		Yes[6]
82-5 - 90-Day Neurotoxicity-Hen/Mammal	TGAI	-	N/A		No

TABLE A
GENERIC DATA REQUIREMENTS F[illegible]HLORPYRIFOS

Data Requirement	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)?	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3]
§158.135 Toxicology (continued)					
CHRONIC TESTING:					
83-1 - Chronic Toxicity - 2 species:					
Rodent	TGAI	A	Partially	00029063, 00081270	Yes[7,3]
Non-rodent	TGAI	A	Partially	00029063, 00081270	Yes[8,3]
83-2 - Oncogenicity Study - 2 species:					
Rat	TGAI	A	Partially	00081270, 00054352	Yes[7,3]
Mouse	TGAI	A	Partially	00081270, 00054352	Yes[9,3]
83-3 - Teratogenicity - 2 species	TGAI	A,B,,F,H,I	Yes	00064934, 0100203 0100204	No
83-4 - Reproduction, 2-generation	TGAI	A	Yes	00064934, 0100202	No
MUTAGENICITY TESTING					
84-2 - Gene Mutation	TGAI	A	Partially	05004861, 05010438 00043657, 0100201	Yes[10,4]
84-2 - Chromosomal Aberration	TGAI	A	Partially	0100201	Yes[10,4]
84-2 - Other Mechanisms of Mutagenicity	TGAI	A	Partially	0100201	Yes[10,4]

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3]
§158.135 Toxicology (continued)					
SPECIAL TESTING					
85-1 - General Metabolism	PAI or PAIRA	A	Partially	00043244, 100204	Yes[11,3]

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1. Composition: PAI = Pure active ingredient; PAIRA = Pure active ingredient, radiolabelled; Choice = Choice of several test substances determined on a case-by-case basis.
2. The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food; C=Aquatic, Food Crop; D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.
3. These data must be submitted no later than OCT - 1988
4. These data must be submitted no later than MAR 1985
5. Not required since a chronic feeding study in a rodent and non-rodent is being required.
6. These data must be submitted no later than OCT 1985 .
7. Only summary data for gross findings and histopathology were available for interim sacrificed and study termination sacrificed animals. Data were not available on clinical observations and individual animal body weights.
8. Histology data were available for each of the individual tissues examined. Data were lacking for several parameters that were monitored (body weight, ophthalmology, etc.) at the intervals specified in the study protocol.
9. Data were not available which indicated that the highest dose tested was the maximum tolerated dose. Ancillary data are needed which define the suitablilty of the doses used.
10. Available reports are study summaries or abstracts. Full reports are needed.
11. Additional metabolism data are needed to identify and quantify the metabolites of chlorpyrifos.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3]
§158.140 Reentry Protection					
132-1 - Foliar Dissipation	TEP	A,B,H,	No	-	Yes[4]
132-1 - Soil Dissipation	TEP	A,B,H,	No	-	Yes[4]
133-3 - Dermal Exposure	TEP	A,B,H,I	No	-	Yes[4]
133-4 - Inhalation Exposure	TEP	A,B,H,I	No	-	Yes[4]
- Dermal and Inhalation Exposure- Monitoring	TEP	B,H,I	No	-	Yes[5]
- Termiticide- Air Monitoring	TEP	B,H,I	No	-	Yes[6]

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1. Composition: TEP = Typical end-use product; EP = End-use product.
2. The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food Crop; C=Aquatic, Food Crop; D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.
3. Data must be submitted no later than OCT 1986.
4. For each use, the registrant is required to propose an acceptable re-entry interval based upon one of the following: 1) the longest, most restrictive existing interval for chlorpyrifos (24 hours-California), or 2) data on dissipation of residues (decline curve), on human exposure to those residues, and on toxicity of chlorpyrifos; or determination of that time beyond which there are no detectable dislodgeable or inhalable residues remaining in the worker/occupant environment.
5. Studies must be designed to assess human exposure to chlorpyrifos for currently registered uses (at labeled rates) in domestic and commercial buildings, and on ornamental turf. Protocols must be submitted 90 days from receipt of this Guidance Document and data must be submitted 18 months after Agency approval of the protocols.
6. These data have been required under a separate 3(c)(2)(B) letter dated February 23, 1984. Protocols must be submitted 90 days from receipt of that letter and the data must be submitted 18 months after Agency approval of protocols for termiticide and other structural insecticide use.

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition^{1}	Use Pattern^{2}	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?^{3}
§158.145 Wildlife and Aquatic Organisms					
AVIAN AND MAMMALIAN TESTING					
71-1 - Acute Avian Oral	TGAI	A,B,D,G	Yes	00051592*, 0100200**	No
71-2 - Acute Avian Dietary	TGAI	A,B,D,G	Yes	00095125*, 00046955* 00095007*, 00095445* 00046954*, 00095447* 00095448*, 00095446** 00095449**, 00095450**	
71-3 - Wild Mammal Toxicity	TGAI	-	No	-	No
71-4 - Avian Reproduction	TGAI	A,B,D,G	Yes	00046951*, 00046952* 00046953*	No
71-5 - Simulated and Actual Field Testing - Mammals and Birds	TEP	A,B,D,G	Yes	00095305**, 00095304** 00095114**	No
AQUATIC ORGANISM TESTING					
72-1 - Acute Freshwater Fish	TGAI	A,B,D,G	Yes	00095013*, 0100201* 00095297, 00095321* 00095296**, 00095298**	No
	TEP^{4}	D	No		Yes
72-2 - Acute Freshwater Invertebrates	TGAI	A,B,D,G	Yes	00102520*, 0100201*	No
	TEP^{4}	D	No		Yes
72-3 - Acute Estuarine and Marine Organisms	TGAI	A,B,D,G	Yes	00056603*, 00095126*	No
	TEP^{4}	D	No		Yes

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLOROPYRIFOS

Data Requirement	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3]
§158.145 Wildlife and Aquatic Organisms					
AQUATIC ORGANISM TESTING (continued)					
72-4 - Fish Early Life Stage and Aquatic Invertebrate Life-Cycle	TGAI	A,B,D,G	Partially	0100202*	Yes[5]
72-5 - Fish - Life Cycle	TGAI	A,B,D,G	No	-	No[6]
72-6 - Aquatic Organism Accumulation	TGAI, PAI or Degradation Product	A,B,D,G	No	-	No[7]
72-7 - Simulated or Actual Field Testing -	TEP	A,B,D,G	Partially	00095366**, 00102758** 00095356**, 00095366** 00095368**, 00095128** 05000838**, 00104696**	Yes[8,9,10]

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1. Composition: TGAI = Technical grade of the active ingredient; PAI = pure active ingredient; TEP= Typical end-use product.
2. The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food Crop; C=Aquatic, Food Crop; D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.
3. Data must be submitted no later than OCT 1985.
4. Testing on Typical end-use product from each of the following categories: EC, granular, and microencapsulated.
5. Studies have been submitted concerning aquatic invertebrates. A fish embryo-larvae study on cold and warm water species is still needed.
6. Depending on the results of the fish early life studies, a fish -life cycle study may be required.
7. These data may be required pending the results of the Environmental Fate tests.
8. Large scale testing involving greater than 100 acres are needed. Individual environmental monitoring for crop runoff is required. Phytotoxic effects of chlorpyrifos on algae and other aquatic plant life is required. Individual environmental monitoring of crop sites such as corn, etc. are required. Pending the results of monitoring studies, full field studies may be required.

§158.145 Wildlife and
Aquatic Organisms

AQUATIC ORGANISM TESTING
(continued)

9. Data are required for the aquatic, non-food use (mosquito larvicide); however requirement is reserved for use patterns A, B and G pending results of environmental fate studies.
10. Protocols for the aquatic, non-food use testing must be submitted within 6 months from receipt of this Guidance Document.

* Study fulfills Guideline Requirements.
** Study must be combined with other studies to fulfill Guideline Requirements.

TABLE A
GENERIC DATA REQUIREMENTS F[illegible]HLORPYRIFOS

Data Requirements	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[3]
§158.150 Plant Protection					
121-1 - TARGET AREA PHYTOTOXICITY	EP	-	No	-	No
NONTARGET AREA PHYTOTOXICITY					
TIER I					
122-1 - Seed Germination/ Seedling Emergence	TGAI	-	No	-	No
122-1 - Vegetative Vigor	TGAI	-	No	-	No
122-2 - Aquatic Plant Growth	TGAI	-	No	-	No
TIER II					
123-1 - Seed Germination/ Seedling Emergence	TGAI	-	No	-	No
123-1 - Vegetative Vigor	TGAI	-	No	-	No
123-2 - Aquatic Plant Growth	TGAI	-	No	-	No
TIER III					
124-1 - Terrestrial Field	TEP	-	No	-	No
124-2 - Aquatic Field	TEP				

---

1. Composition: TGAI = Technical grade of the active ingredient; TEP = Typical end-use product.
   EP = End-use product.
2. The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food Crop; C=Aquatic, Food Crop;
3. These data are not required because it is believed that there is no phytotoxicity problem with chlorpyrifos.

66

TABLE A
GENERIC DATA REQUIREMENTS FOR CHLORPYRIFOS

Data Requirement	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?
§158.155 Nontarget Insect					
NONTARGET INSECT TESTING - POLLINATORS:					
141-1 - Honey bee acute contact	TGAI	A,B,H	Yes	00066220, 05001991	No
141-2 - Honey bee - toxicity of residues on foliage	TEP	A,B,H	Yes	00040602	No
141-3 - Wild bees important in alfalfa pollination - toxicity of residues on foliage	TEP	A	Yes	00040602	No
141-4 - Honey bee subacute feeding study	-	-	-	-	Reserved[3]
141-5 - Field testing for pollinators	TEP	A,B,H	No	-	No[4]

TABLE A
GENERIC DATA REQUIREMENTS [illegible]HLORPYRIFOS

Data Requirement	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?
§158.155 Nontarget Insect (continued)					
NONTARGET INSECT TESTING - AQUATIC INSECTS:					
142-1 - Acute toxicity to aquatic insects	-	-	-	-	Reserved[5]
142-2 - Aquatic insect life-cycle study	-	-	-	-	Reserved[5]
142-3 - Simulated or actual field testing for aquatic insects	-	-	-	-	Reserved[5]
143-1 thru 143-3 - NONTARGET INSECT TESTING - PREDATORS AND PARASITES	-	-	-	-	Reserved[5]

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1. Composition: TGAI = Technical grade of the active ingredient; TEP = Typical end-use product.
2. The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food; C=Aquatic, Food Crop: D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.
3. Reserved pending development of test methodology.
4. Data from 1st and 2nd tier studies do not indicate the need for field studies.
5. Reserved pending Agency decision as to whether the data requirement should be established.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

§158.120 - PRODUCT CHEMISTRY

Guideline Citation and Name of Test	Test Substance[1]	Guidelines Status[2]	Are Data Required Yes	No	Footnote Number
Product Identity:					
61-1 - Identity of Ingredients	MP	R	☒	☐	
61-2 - Statement of Composition	MP	R	☒	☐	
61-3 - Discussion of Formation of Ingredients	MP	R	☒	☐	
Analysis and Certification of Product Ingredients					
62-1 - Preliminary Analysis	MP	R	☒	☐	
62-2 - Certification of Limits	MP	R	☒	☐	
62-3 - Analytical Methods for Enforcement of Limits	MP	R	☒	☐	
Physical and Chemical Characteristics					
63-2 - Color	MP	R	☒	☐	
63-3 - Physical State	MP	R	☒	☐	
63-4 - Odor	MP	R	☒	☐	
63-7 - Density, Bulk Density, or Specific Gravity	MP	R	☒	☐	
63-12 - pH	MP	R	☒	☐	

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

§158.120 - PRODUCT CHEMISTRY (Con't)

Guideline Citation and Name of Test	Test Substance[1]	Guidelines Status[2]	Are Data Required Yes	No	Footnote Number
Physical and Chemical Characteristics (Continued)					
63-14 - Oxidizing or Reducing Action	MP	CR	☒	☐	
63-15 - Flammability	MP	CR	☒	☐	
63-16 - Explodability	MP	R	☒	☐	
63-17 - Storage Stability	MP	R	☒	☐	
63-18 - Viscosity	MP	CR	☒	☐	
63-19 - Miscibility	MP	CR	☒	☐	
63-20 - Corrosion Characteristics	MP	R	☒	☐	
Other Requirements:					
64- 1 - Submittal of samples	PAI	CR	☐	☒	

1. Test substance: MP = Manufacturing-use product; PAI = Pure active ingredient.

2. Guideline status: R = Required; CR = Conditionally required.

3. These data must be submitted no later than MAR 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

Pulvex Flea Free-30 Brand Insecticide Base (59-179)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Ultratec Insecticide Chlorpyrifos Transparent E.C. 25 (432-625)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

Ultratec Insecticide W/Chlorpyrifos Transparent Emuls. 25 (432-662)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Dursban 6 (464-358)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

Dursban MC (464-381)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING .				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR - 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Dursban F (464-404)

Data Requirement	Composition[1]	Does EPA Have Data To Satisty This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Chlorpyrifos 50 P (464-489)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Dursban R (464-558)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Dursban 30 SEC (464-559)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Dursban MCR (464-564)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Dursban 6R (464-567)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Dursban 5G (464-575)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Dursban HF (464-588)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1965.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Prentox 10% Chlorpyrifos MG (655-592)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Prentox 20% Chlorpyrifos MG (655-593)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR - 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Prentox Pyrifos 25% MG (655-695)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

Pyrifos 30% SEC (655-738)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

---

1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

Stephenson Chemicals Big "D" Concentrate (4887-169)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

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1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR [illegible] 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

SMCP DFC-4 Formulators Concentrate (6720-195)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

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1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

SMCP Dursban 10% Granular Insecticide (6720-246)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

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1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

D/C-4 (9782-29)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

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1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Dursban Insect Spray (20954-16)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

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1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS

SMCP Dursban 15% Granular Insecticide (6720-245)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00046543	No
81-2 - Dermal	MP	Yes	00046543	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00046543	No
81-5 - Primary Dermal Irritation	MP	Yes	00046543	No
81-6 - Dermal Sensitization	MP	No	-	Yes

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1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR [illegible] 1985.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING CHLORPYRIFOS
Insecta No. 101 thru 108 (45600-2 thru-9)

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?[2]
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Oral - Rat	MP	Yes	00080022	No
81-2 - Dermal	MP	Yes	00080022	No
81-3 - Inhalation - Rat	MP	No	-	Yes
81-4 - Primary Eye Irritation - Rabbit	MP	Yes	00080022	No
81-5 - Primary Dermal Irritation	MP	Yes	00080022	No
81-6 - Dermal Sensitization	MP	No	-	Yes

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1. Composition: MP = Manufacturing-use product.
2. Data must be submitted no later than MAR 1985.

IV. SUBMISSION OF REVISED LABELING AND PACKAGING INFORMATION

Note: This section applies to end-use products only to the the extent described under Section II of this document. Otherwise, the following information pertains exclusively to manufacturing-use products.

The Agency requires applicants for registration or reregistration to ensure that each label (1) contains accurate, complete, and sufficient instructions and precautions, reflecting the results of data concerning the product and its ingredients, and (2) incorporates labeling format and terminology which are sufficiently standardized to avoid user confusion.

As part of your application, you will be required to submit draft labeling consistent with: applicable product-specific data; the precautionary statements and use directions; and the regulations concerning classification [40 CFR §162.11(c)], packaging [40 CFR §162.16], and labeling [40 CFR §162.10, Appendix IV-1 an IV-2], as indicated by the following paragraphs of this chapter of the guidance document.

If owners of currently registered products fail to submit revised labeling and packaging information complying with this Section and/or Section II, EPA may issue a notice of intent to cancel the registration under FIFRA §6(b)(1).

All labeling changes must appear on all products released for shipment one year from the date this Guidance Document is issued.

A. Label Contents

40 CFR §162.10 (Appendix IV-1) requires that certain specific labeling statements must appear at certain locations on the label. This is referred to as format labeling. Specific label items listed below are keyed to Tables D, E, and F (Appendix IV-2).

Item 1. PRODUCT NAME - The name, brand, or trademark is required to be located on the front panel, preferably centered in the upper part of the panel. The name of a product will not be accepted if it is false or misleading. See Appendix IV-1. [40 CFR §162.10(b)]

Item 2. COMPANY NAME AND ADDRESS - The name and address of the registrant or distributor is required on the label. The name and address should preferably be located at the bottom of the front panel or at the end of the label text. See Appendix IV-1. [40 CFR §162.10(c)]

Item 3. NET CONTENTS - A net content statement is required on all labels. The preferred location is the bottom of the front panel immediately above the company name and address, or at the end of the label text. The net contents must be stated in terms of weight, expressed as avoirdupois pounds and ounces, and stated in terms of the largest suitable unit, i.e., "1 pound 10 ounces" rather than "26 ounces." In addition to the required units specified, net contents may be expressed in metric units. See Appendix IV-1. [40 CFR §162.10(d)]

Item 4. EPA REGISTRATION NUMBER - The registration number assigned to the pesticide product must appear on the label, preceded by the phrase "EPA Registration No.," or "EPA Reg. No." The registration number must be set in type of a size and style similar to other print on that part of the label on which it appears and must run parallel to it. The registration number and the required identifying phrase must not appear in such a manner as to suggest or imply recommendation or endorsement of the product by the Agency. See Appendix IV-1. [40 CFR §162.10(e)]

Item 5. EPA ESTABLISHMENT NUMBER - The EPA establishment number, preceded by the phrase "EPA Est." is the final establishment at which the product was produced, and may appear in any suitable location on the label or immediate container. It must also appear on the wrapper or outside container of the package if the EPA establishment registration number on the immediate container cannot be clearly read through such wrapper or container. See Appendix IV-1. [40 CFR §162.10(f)]

Item 6. INGREDIENT STATEMENT - An ingredient statement is required on the front panel and must contain the name and percentage by weight of each active ingredient and the total percentage by weight of all inert ingredients. The preferred location is immediately below the product name. The ingredient statement must run parallel with, and be clearly distinguished from, other text on the panel. It must not be placed in the body of other text. See Appendix IV-1. [40 CFR 162.10(g)]

Item 6A. POUNDS PER GALLON STATEMENT - For liquid agricultural formulations, the pounds per gallon of active ingredient must be indicated on the label.

Item 7. FRONT LABEL PRECAUTIONARY STATEMENTS - All labels are required to have precautionary statements grouped together on the front panel, preferably within a block outline. The table below shows the minimum type size requirements on various size labels, as set forth in the Regulations.

Size of Label on Front Panel in Square Inches	Signal Word as Required Minimum Type Size All Capitals	"Keep Out of Reach of Children" as Required
5 and under	6 point	6 point
above 5 to 10	10 point	6 point
above 10 to 15	12 point	8 point
above 15 to 30	14 point	10 point
over 30	18 point	12 point

Item 7A. CHILD HAZARD WARNING STATEMENT - All labels are required to have the statement "Keep Out of Reach of Children" located on the front panel above the signal word except where contact with children during distribution or use is unlikely. See Appendix IV-1. [40 CFR §162.10(h)(1)(ii)]

Item 7B. SIGNAL WORD - The signal word (Caution, Warning, or Danger) is required on the front panel immediately below the child hazard warning statement. See Appendix IV-1. [40 CFR §162.10 (h)(1)(i)]

Item 7C. SKULL & CROSSBONES AND WORD "POISON" - On products assigned a toxicity Category I on the basis of oral, inhalation, or dermal toxicity, the word "Poison" shall appear on the label in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word poison. See Appendix IV-1. [40 CFR §162.10(h)(1)(i)]

Item 7D. STATEMENT OF PRACTICAL TREATMENT - A statement of practical treatment (first aid or other) shall appear on the label of pesticide products in toxicity Categories I, II, and III. See Appendix IV-1. [40 CFR §162.10(h)(1)(iii)]

Item 7E. REFERRAL STATEMENT - The statement "See Side (or Back) Panel for Additional Precautionary Statements" is required on the front panel for all products, unless all required precautionary statements appear on the front panel. See Appendix IV-1. [40 CFR §162.10(h)(1)(iii)]

Item 8. SIDE/BACK PANEL PRECAUTIONARY LABELING - The precautionary statements as listed below must appear together on the label under the heading "PRECAUTIONARY STATEMENTS." The preferred location is at the top of the side or back panel preceding the directions for use, and it is preferred that these statements be surrounded by a block outline. Each of the three hazard warning statements must be headed by the appropriate hazard title. See Appendix IV-1. [40 CFR §162.10 (h)(2)]

Item 8A. HAZARD TO HUMANS AND DOMESTIC ANIMALS - Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions taken to avoid accident, injury or damage. See Appendix IV-1. [40 CFR §162.10 (h)(2)(i)]

Item 8B. ENVIRONMENTAL HAZARD - Where a hazard exists to non-target organisms excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precautions to avoid potential accident, injury, or damage. See Appendix IV-1. [40 CFR §162.10(h)(2)(ii)]

Item 8C. PHYSICAL OR CHEMICAL HAZARD

1. Flammability statement. Precautionary statements relating to flammability of a product are required to appear on the label if it meets the criteria in Appendix IV-3. The requirement is based on the results of the flashpoint determinations and flame extension tests required to be submitted for all products. These statements are to be located in the side/back panel precautionary statements section, preceded by the heading "Physical/Chemical Hazards." Note that no signal word is used in conjunction with the flammability statements.

2. Criteria for declaration of non-flammability. The following criteria will be used to determine if a product is non-flammable:

    a. A "non-flammable gas" is a gas (or mixture of gases) that will not ignite when a lighted match is placed against the open cylinder valve.

    b. A "non-flammable liquid" is one having a flashpoint greater than 350°F (177°C) as determined by the method specified in 40 CFR §163.61-8(c)(13)(ii) of Subpart D.

    c. A "non-flammable aerosol" is one which meets the following criteria:

        i. The flame extension is zero inches, using the method specified in 40 CFR §163.61-8(c)(13)(ii);

        ii. There is no flash back; and

        iii. The flashpoint of the non-volatile liquid component is greater than 350°F (177°C), determined by the method specified in 40 CFR §163.61-8(c)(13)(i).

3. Declaration of non-flammability. Products which meet the criteria for non-flammability specified above may bear the notation "non-flammable" or "nonflammable (gas, liquid, etc.)" on the label.

   It may appear as a substatement to the ingredients statement, or on a back or side panel, but shall not be highlighted or emphasized (as with an inordinately large type size) in any way that may detract from precaution.

4. Other physical/chemical hazard statements. When chemistry data submitted in accordance with 40 CFR §163.61-10(c) demonstrate hazards of a physical or chemical nature other than flammability, appropriate statements of hazard will be prescribed. Such statements may address hazards of explosivity, oxidizing or reducing capability, or mixing with other substances to produce toxic fumes.

Item 9. MISUSE STATEMENT - The following statement is required on your label: "It is a violation of Federal law to use this product in a manner inconsistent with its labeling." See Appendix IV-1. [40 CFR §162.10(1)(2)(ii)]

Item 10A. STORAGE AND DISPOSAL BLOCK - All labels are required to bear storage and disposal statements. These statements are developed for specific containers, sizes, and chemical content. Make certain that the statement you use pertains specifically to your product. These instructions must be grouped and appear under the heading "Storage and Disposal" in the directions for use. This heading must be set in the same type sizes as required for the child hazard warning. Refer to Appendix IV-5 for the latest specific storage and disposal product label statements.

Item 10B. DIRECTIONS FOR USE - Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment. See Appendix IV-1. [40 CFR §162.10]

B. Collateral Information

Bulletins, leaflets, circulars, brochures, data sheets, flyers, and other graphic printed matter which is referred to on the label or which is to accompany the product are termed collateral labeling. Such labeling may not bear claims or representations that differ in substance from those accepted in connection with registration of the product. It should be made part of the response to this notice and submitted for review.

V. INSTRUCTIONS FOR SUBMISSION

All applications prepared in response to this Notice should be addressed as follows:

Product Manager: Jay S. Ellenberger (PM 12)
Phone No. (703) 557-2386
Registration Division (TS-767)
Office of Pesticide Programs
Environmental Protection Agency
401 M St., S.W.
Washington, D.C. 20460

For each product for which continued registration is desired:

1. Within 90 days from receipt of this document, you must submit the "FIFRA Section 3(c)(2)(B) Summary Sheet" EPA Form 8580-1. Refer to Appendix II-2 with appropriate attachments.

2. Within 6 months from receipt of this document registrants must submit:

   a. Confidential Statement of Formula, EPA Form 8570-4.

   b. Product Specific Data Report, EPA Form 8580-4 (Appendix III-1).

   c. Two copies of any required product-specific data.

   d. Two copies of draft labeling, including the label and associated brochures. If current labeling conforms to the requirements of this guidance document and the results of the short-term data, the registrant may submit such labeling. (End-use product labeling needs to comply specifically with the instruction in Section II of this guidance document.) The labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for stortage in 8-1/2 x 11 inch files. The draft label must indicate the intended colors of the final label, clear indication of the front panel label, and the intended type sizes of the text.

3. Within the time set forth in Table A, all generic data must be submitted by the affected registrant(s).

Note: If for any reason any required test is delayed or aborted so that meeting the agreed submission time will be delayed, notify the Product Manager listed above.

After the Supreme Court has ruled on the Union Carbide Agricultural Products Co. Inc., et. al. v. Ruckelshaus Decision, you will be informed as to when you must submit your Application for Amended Pesticide Registration (EPA Form 8570-1) and the associated data support information.

APPENDIX II-1

OFFICE OF PESTICIDE PROGRAMS
REGISTRATION GUIDANCE DOCUMENT BIBLIOGRAPHY
Citations Considered to be Part of the Data Base Supporting Registration Under this Guidance Document

GS0100001 Bauriedel, W.R. 1976. Identification of chlorpyrifos residue in corn plants. Correspondence to R.W. Morgan dated September 9 and submitted by Dow Chemical Co. under PP#6F1777.

GS0100002 Bauriedel, W.R., and J.H. Miller. 1980. The metabolic fate of ^{14}C-chlorpyrifos applied to an apple tree. Dated December 24 and submitted by Dow Chemical Co. under Section D of PP#0F2281(09942).

GS0100003 Bauriedel, W.R. and J.H. Miller. 1981. The metabolic fate of ^{14}C-chlorpyrifos applied topically to soybeans. Dated March 2 and submitted by Dow Chemical Co. under section D of PP#0F2281 (09942).

GS0100004 Smith, G.N., B.S. Watson, and F.S. Fischer. 1967. Investigations on Dursban insecticide. Uptake and translocation of [^{36}Cl] O,O-diethyl O-3,5,6-trichloro-2-pyridyl phosphorothioate and [^{14}C]O,O-diethyl O-3,5,6-trichloro-2-pyridyl phosphorothioate by beans and corn. J. Agric. Food Chem, Vol. 15, Jan/Feb. 1967, No. 1, pp. 127-131; submitted by Dow Chemical Co. under PP# 3F1306 (117938).

GS0100005 Smith, G.N., B.S. Watson, and F.S. Fischer. 1967. Investigations on Dursban insecticide. Metabolism of 0,0,-diethyl 0-3,5,6-trichloro-2-pyridyl phosphorothioate and 3,5,6-trichloro-2-pyridinol in plants. J. Agric. Food Chem., Vol. 15, Sept./Oct. 1967, No. 5, pp. 870-877, submitted by Dow Chemical Co. under Section D of PP#3F1306(117938).

GS0100006 Analytical Development Corp. 1980. Project no. 577; Report no. GH-C 1408R: Determination of ^{14}C-residues following oral administration of ^{14}C-chlorpyrifos to lactating goats. Prepared for and submitted by Dow Chemical Co. under PP#9F2270 (070176).

GS0100007 Betz, Fred. Evironmental Safety Section, EEB, EPA. Memo of 2/28/78 pertaining to mosquito larvacide label. EPA subject file for chlorpyrifos.

GS0100008 Cummings, Joseph G., Chief, Chemistry Branch, Regitration Division, EPA. Letter of 4/12/77 to Dr. M. L. Leng of Dow Chemical Co. Contained in the EPA subject file for chlorpyrifos.

GS0100009 Dow Chemical Co. 1970. Report no. OL3132: An analytical method for the determination of 3,5,6-trichloro-2-pyridinol in animal tissues and the metabolism of the pyridinol in rats. Submitted under PP#3F1306(117938).

GS0100010 Dow Chemical Co. 1970. Report no. R-582: Comparative metabolism of insecticides. I. Preliminary studies of ring labeled 0,0-diethyl-0,3,5,6-trichloro-2-pyridyl phosphorothioate breakdown with rat liver microsomes. Submitted under PP#3F1306(117938).

GS0100011 Dow Chemical Co. 1971. Report no. NBA-9: Absorption, excretion, and distribution of 0-0-diethyl 0-3,5,6-trichloro-2,6-C^{14}-2-pyridyl phosphorothiate (C-^{14} - Dowco 179) in rats. Submitted under PP#3F1306(117938).

GS0100012 Dow Chemical Co. 1971. Report no. NBA-10: Absorption, excretion and distribution of 3,5,6-trichloro-2,6-C^{14}-2pyridinol in rats. Submitted under PP#3F1306(117938).

GS0100013 Dow Chemical Co. 1972. Report no. NBE-5R: Dehalogenation of chlorpyrifos in Australian cattle dip solutions. EPA subject file for chlorpyrifos.

GS0100014 Dow Chemical Co. - Australia. Appendixes 1-13 submitted originally to the Australia Department of Primary Industry and submitted to EPA as attachments to the letter of Robert Morgan dated 8/22/77 and contained in the EPA subject file for chlorpyrifos.

GS0100015 Dow Chemical Co. 1981. Report no. GS-C 1408: The metabolic fate of ^{14}C-chlorpyrifos fed to lactating goats. Submitted under PP#9F2270 (070176).

GS0100016 Dow Chemical Co. 1981. Report no. GS-C 1408R: The metabolic fate of ^{14}-chlorpyrifos fed to lactating goats. Submitted under PP#9F2270 (070176).

GS0100017 Eto, M. *Organophosphorus Pesticides: Organic and Biological Chemistry*, CRC Press, Cleveland, Ohio, 1074, pp. 240-253.

GS0100018 Gutenmann, W.H., L.E. St. John, Jr., and D.J. Lisk. 1968. Metabolic studies with 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl) phosphorotioate (Dursban) insecticide in a lactating cow. J. Agric. Food Chem. 16(1): 45-47. Submitted by Dow Chemical Co. under PP#3F1306 (117938).

GS0100019 Lores, Emile M., G. Wayne Sovocool, Robert L. Harless, Nancy K. Wilson, and Robert F. Moseman. 1976. A new metabolite of chlorpyrifos: Isolation and identification. J. Agric. Food Chem. 26(1):118-122.

GS0100020 Luke, Barry G. and Colin J. Dahl. 1976. Detection of 0,0-diethyl-0-(2,5-dichlorophenyl)phosphorothioate and 0-0,diethyl-0-(3,6-dichloro-2-pyridyl)phosphorothioate in meat fat. Journal of the AOAC 59(5):1081-1087.

GS0100021 Morgan, Robert W; Dow Chemical Co. Letter of 8/22/77 to Mr. Joseph G. Cummings, Chief, Chemistry Branch, EPA. Contained in the EPA subject file for chlorpyrifos.

GS0100022 Shah, P.V., R.J. Monroe, and F.E. Guthrie. 1981. Comparative rates of dermal penetration of insecticides in mice. Toxicology and Applied Pharmacology 59:414-423.

GS0100023 Smith, Grant N., Betty S. Watson, and Faye S. Fischer. 1966. The metabolism of [^{14}C]0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate (Dursban) in fish. J. Econ. Entomol. 59(6):1464-1475. Submitted by Dow Chemical Co. under PP#3F1306 (117938).

GS0100024 Smith, Grant N., Betty S. Watson, and Faye S. Fischer. 1967. Investigations on Dursban Insecticide. Metabolism of [^{36}Cl]O-O-diethyl 0-3,5,6-trichloro-2-pyridyl phosphorothioate in rats. J. Agric. Food Chem. 15(1):132-138. Submitted by Dow Chemical Co. under PP#3F1306(117938).

GS0100025 Claborn, H.V., Mann, H.D. and Oehler, D.D. 1968. Dursban determination in milk and body tissues of cattle. J.A.O.A.C. 51(6):1243-1245. Submitted under Section D of PP#9G0817(11609). Dow Chemical Co. 1969.

GS0100026 Dow Chemical Co. 1969. Determination of residues of chlorpyrifos and its oxygen analog in peaches by gas chromatography, by H.J. Dishburger, J.R. Rice, and J. Pennington. Submitted under PP#3F1306(117943).

GS0100027 Dow Chemical Co. 1970. Determination of residues of 3,5,6-trichloro-2-pyridinol in bovine tissues by gas chromatography. Method no. ACR 70.19 by McKellan, R.L. and Dishburger, H.J. Submitted under Section D of PP#3F1306(117943).

GS0100028 Dow Chemical Co. 1971. Determination of residues of O-O-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate (chlorpyrifos) and 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphate in peaches by gas chromatograph with flame photometric detection. Method No. ACR 71.14, by Wetters, J.H. and Dishburger, H.J. Submitted under Section D of PP#3F1306(117946).

GS0100029 Dow Chemical Co. 1971. Determination of residues of 3,5,6-trichloro-2-pyridinol in corn grain, forage and stover by gas chromatography. Method No. ACR 71.9 by McKellar, R.L. Submitted under Section D of PP#3F1306 (117946).

GS0100030 Dow Chemical Co. 1971. Determination of residues of 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate in corn by gas chromatography with flame photometric detection. Method no. ACR 71.18, by Wetters, J.H. and Dishburger, H.J. submitted under Section D of PP#3F1306(117946).

GS0100031 Dow Chemical Co. 1971. Determination of residues of 0,0-diethyl 0-3, 5,6,-trichloro-2-pyridyl phosphorothioate in milk and cream by gas chromatography. Method No. ACR 71.1 by Craig L.F. Submitted under Section D of PP#3F1306 (117946).

GS0100032 Dow Chemical Co. 1971. Determination of residues of 3,5,6-trichloro-2-pyridinol in milk and cream by gas chromatography. Method ACR 71.2 by McKellar, R.L. Submitted under Section D of PP#3F1306(117946).

GS0100033 Dow Chemical Co. 1972. Determination of residues of 3,5,6-trichloro-2-pyridinol in swine tissues by gas chromatography method no. ACR 72.2 by McKellar R.L. Submitted under Section D of PP#3F1306(117943).

GS0100034 Dow Chemical Co. 1972. Determination of residues of 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate in swine tissues by gas chromatography with flame phomometric detection. Method No. ACR 72.1 by Wetters, J.L. Submitted under Section D of PP#3F1306(117943).

GS0100035 Dow Chemical Co. 1972. Determination of residues of O,O-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate in chicken tissues and eggs by gas chromatography with flame photometric detection. Method no. ACR 72.3 by Wetters, J.H. Submitted under Section D of PP#3F1306(117946).

GS0100036 Dow Chemical Co. 1972. Determination of residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in or on bananas grown in chlropyrifos-impregnated polyethylene bags (Shrouds). Method Nos. ACR 72.13 and 72.14 by Herman, J.L. and Dishburger, H.J. Section D of PP#3F1370(118172).

GS0100037 Dow Chemical Co. 1972. Determination of residues of 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate in sweet corn by gas chromatography with flame photometric detection. Method No. 72.9, by Wetters, J.H. Submitted under Section D of PP#4F1445(118407).

GS0100038 Dow Chemical Co. 1972. Determination of residues of 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate in snapbeans and snapbean forage by gas chromatography. Method No. ACR 72.15, by McKeller, R.L. Submitted under Section D of PP#4F1445(118407).

GS0100039 Dow Chemical Co. 1973. Determination of residues of 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate in sugar beet liquid process fractions by gas chromatography. Method No. ACR 73.6 by Wetters, J.H. Submitted under Section D of PP#1F2527(070368).

GS0100040 Dow Chemical Co. 1973. Determination of residues of 3,5,6-trichloro-2-pyridinol in bovine tissues by gas chromatography. Method no. ACR 70.19R by McKellar, R.L. and Dishburger, H.J. Submitted under Section D of PP#3F1306(117933).

GS0100041 Dow Chemical Co. 1973. Determination of residues of 3,5,6-trichloro-2-pyridinol in peaches by gas chromatography. Method no. ACR 71.11S, by R.L. McKellar. Submitted under Section D of PP#3F1306(117336).

GS0100042 Dow Chemical Co. 1973. Determination of residues of 3,5,6-trichloro-2-pyridinol in lema and snapbean forage and beans by gas chromatography. Method No. ACR 71.19R by McKellar, R.L. Submitted under Section D of PP#4F1445(118407).

GS0100043 Dow Chemical Co. 1973. Determination of residues of 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate in sugar beets and solid process fractions by gas chromatography. Method No. ACR 73.5 by Wetters, J.H. Submitted under Section D of PP#6F1745.

GS0100044 Dow Chemical Co. 1974. Determination of residues of 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate in cottonseed and cotton gin trash by gas chromatography. Method No. ACR 74.4T by McKellar, R.L. Submitted under Section D of PP#5G1595(119148).

GS0100045 Dow Chemical Co. 1975. Determination of residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in cotton seed, gin trash and process fractions following multiple treatments of cotton plants with Lorsban insecticide. Method No. 75.1T by McKellar, R.L. and Disburger, H.J. Submitted under Section PP#5G1595(119148).

GS0100046 Dow Chemical Co. 1975. Determination of residues of 0,0-diethyl 0-(3,5,6-trichloro-2-pyridyl)phosphorothioate in sweet potatoes by gas chromatography. Method ACR 75.4 by Wetters, J.H. Submitted under Section D of PP#6F1786.

GS0100047 Dow Chemical Co. 1976. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in sorghum green plant, silage, dry plant and grain following multiple applications with Lorsban insecticide. Method No. ACR 76.3 by Wetters, J.H. and Dishburger, H.J. Submitted under Section D of PP#6F1830.

GS0100048 Dow Chemical Co. 1976. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in/on tomatoes grown in Mexico following multiple foliar applications of Lorsban insecticide. Method No. ACR 76.9 by Miller, P.W. and Ervick, D.K. Submitted under Section D of PP#8E2092(097157).

GS0100049 Dow Chemical Co. 1977. Determination of residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in fresh tomatoes, juice and paste from Israel following multiple treatment with Dursban 4 insecticide. Method No. ERC 76.1 by Hollick, C.B. and Iosson, D.I. Submitted under Section D of PP# 8E2092(097157).

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GS0100057 Dow Chemical Co. 1976. Recovery of 3,5,6-trichloro-3-pyridinol from fruit and nut samples fortified with chlorpyrifos or 3,5,6-trichloro-2-pyridinol after prolonged storage at 0°F. Submitted under PP#6F1777 (accession number unspecified).

GS0100058 Dow Chemical Co. 1973. Data tables entitled: "Recovery of chlorpyrifos from crop substrates fortified with known amounts of the compound following storage for various time intervals at 0°F." and "Reanalysis of tissues from cattle for chlorpyrifos following storage for various time intervals of 0°F." and "Recovery of chlorpyrifos from milk fortified with known amounts of the compound following storage at 0°F". Submitted by Dow Chemical Co. in a letter to Edward Gross, RD, EPA, dated May 21, 1973. Filed under PP#3F1306 (117945).

GS0100059 Dow Chemical Co. 1976. Recovery of chlorpyrifos and 3,5,6-trichloro-2-pyridinol from fortified sweet potatoes after storage in a freezer at 0°F. Table III Report No. GH-C 824. Submitted under PP#6F1786 (undesignated accession number).

GS0100060 Dow Chemical Co. 1976. Recovery of chlorpyrifos and 3,5,6-trichloro-2-pyrifinol from sorghum samples fortified with both compunds and stored in a freezer at -18°C. Table III in Report No. GH-C 900. Submitted under PP#6F1830 (undesignated accession number).

GS0100061 Dow Chemical Co. 1978. Recovery of chlorpyrifos and 3,5,6-trichloro-2-pyridinol from tomato samples fortified with these compounds and stored in a freezer at -18°C. Table III in Report No. GH-C 829. Submitted under PP#8E2092 (097157).

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GS0100063 Dow Chemical Co. 1979. Storage stability data table III in Report No. GH-C 1041. Submitted under PP#9G2168/9H5204 (097781).

GS0100064 Dow Chemical stability data table III in Report No. GH-C 1209. Submitted under PP#0F2281 (099038).

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GS0100067 IR-4 Project. 1981. Data tables entitled: "Recovery of chlorpyrifos from 10g samples of control cherries spiked and stored 8 months at -20°C." and "Recovery of 3,5,6-trichloro-2-pyridinol from 10g samples of control cherries spiked and stored 15 months at -20°C." Submitted under PP#1E2529 (870135).

GS0100068 Dow Chemical Co. 1981. Stability of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in whole tomatoes held in frozen storage. Table V in Report No. GH-C 1282. Submitted under FAP#1H5295 (244590).

GS0100069 Dow Chemical Co. 1982. Recovery of 3,5,6-trichloro-2-pyridinol from sugar beet roots and tops fortified with either chlorpyrifos or 3,5,6-trichloro-2-pyridinol and stored in a freezer. Table II in Report No. GH-C 1520. Submitted under PP#3H5352 (079855).

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GS0100071 IR-4 Project. 1978. Data tables entitled: "Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol (TCP) in radish: Analysis by the Department of Agricultural Chemistry, Washington State Univ." In Section D of PP8E2038(097442).

GS0100072 IR-4 Project. 1978. Data entitled: IR-4 Project 75. 020-Wells and 020-Libby. In section D of PP#8E2038(097742).

GS0100073 IR-4 Project. 1978. Residues reports. Northeast Regional Pesticide Laboratory. C. Eckenrode, investigator. Submitted under PP#8E2038(097742).

GS0100074 IR-4 Project. 1978. Data table entitled: "IR-4 Project 75, 020-Libby. Submitted under PP#8E2038 (097442).

GS0100075 Dow Chemical Co. 1976. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in sugar beets and process fractions treated with Lorsban insecticide. Report No. GH-C 729. Submitted in Section D of PP#6F1745 (accession number unknown).

GS0100076 Dow Chemical Co. 1982. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in sugar beets following multiple applications of Lorsban insecticides. Submitted in Section D of PP#2F2684/FAP#2H5352 (070855).

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GS0100078 IR-4 Project. 1978. Residues of chlorpyrifos in turnip roots and leaves: Analysis by the Department of Agricultural Chemistry, Washington State University. Submitted under PP#8E2038 (097442).

GS0100079 IR-4 Project. 1978. Data table entitled: IR-4 Project 75. 020-Wells; Part 9 of 9. Submitted under PP#8E2038 (097442).

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GS0100081 IR-4 Project. 1980. Residue reports: turnip tops and turnip roots. Submitted under PP#0E2411(099577).

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GS0100083 Dow Chemical Co. 1982. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in sugar beets following multiple applications of Lorsban insecticides. Report No. GH-C 1520. Submitted in Section D of PP#2F2684/FAP 2H5352 (070855).

GS0100084 Dow Chemical Co. 1980. Section D PP#0E2387(099507).

GS0100085 IR-4 Project. 1977. Residue data for chlorpyrifos residues in or on broccoli; from pages 18, 27, 28, 32, 76, 78, 81, 83, and 101. Submitted under section D of PP#7E2010.

GS0100086 IR-4 Project. 1977. Residue data for chlropyrifos residues in or on brussels sprouts from pages 17, 22, 27, 31, 47, 49, 52, 54, and 102. Submitted under Section D of PP#7E2010.

GS0100087 IR-4 Project. 1977. Residue data for chlorpyrifos residues in or on cabbage; from pages 14, 16, 20, 21, 25, 26, 30, 56, 58, 60, 63, 64, 65, and 103. Submitted under Section D of PP#7E2010.

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GS0100090 Dow Chemical Co. 1979. Tables 6-11, Section D. PP#9F2221 (accession no. unknown).

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GS0100093 Dow Chemical Co. 1979. Tables 4-11, Section D. PP#9F2270 (070176).

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GS0100095 Dow Chemical Co. 1978. Section B of PP#8E2092 (097157).

GS0100096 Dow Chemical Co. 1979. Data tables XI-XVII entitled "Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in cucumbers grown from seed treated with Lorsban insecticide." Report No. GH-C 1159. Submitted under PP#9F2221/FAP#9H5227 (accession number unknown).

GS0100097 Dow Chemical Co. 1979. Data tables IV-X entitled "Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in pumpkins grown from seed treated with Lorsban insecticide." Report No. GH-C 1159. Submitted under PP#9F2221/FAP#9H5227 (accession number unknown).

GS0100098 Dow Chemical Co. 1981. Residues data from Tables IX-XXIII in Report GH-C 1441. Submitted under PP#1F2575 (070368).

GS0100099 Dow Chemical Co. 1979. Tables IV and V in Report GH-C 1041 entitled "Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in whole oranges, peel plus pulp, and juice following a foliar application with Lorsban 4E insecticide." Submitted under PP#9G2168/FAP#9H5204.

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GS0100102 Wetters, J.H. and H.J. Dishburger. 1975. Determination of residues in fruits and nuts following dormant application of Lorsban insecticide. Table Nos. XIII and XIV. Report No. GH-C 783 dated January 28 and submitted by Dow Chemical Co. under PP#6F1777.

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GS0100104 Dishburgher, H.J., J.R. Rice, and J. Pennington. 1969. Determination of residues of chlorpyrifos and its oxygen analog in peaches by gas chromatography. Report No. TA-436R dated September 16 and submitted by Dow Chemical Co. under PP#3F1306(117943).

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GS0100106 Wetters, J.H. and H.J. Dishburger. 1975. Determination of residues in fruits and nuts following dormant application of Lorsban insecticide. Table Nos. XV-XX. Report No. GS-C 783 dated January 28 and submitted by Dow Chemical Co. under PP#6F1777.

GS0100107 Wetters, J.H and H.J. Dishburger. 1975. Determination of residues in fruits and nuts following dormant application of Lorsban insecticide. Table Nos. XXV-XXXI. Report No. GH-C 783 dated January 28 and submitted by Dow Chemical Co. under PP#6F1777.

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GS0100109 IR-4 Rutgers University. 1982. Residue data sheets. Section D. PP#2E2584 (070720).

GS0100110 IR-4 Northeast Regional Laboratory. 1980. Residue data sheets. Section D PP#0E2283 (099605).

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GS0100112 Miller, P.W. 1982. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in walnuts receiving multiple foliar applications of Lorsban insecticides. Report No. GH-C 1579 submitted by Dow Chemical Co. undr PP#3F2778.

GS0100113 Dow Chemical Co. 1973. Data tables III-VIII entitled "Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in green corn forage, grain and stover following application of Dursban insecticide at planting" in Report No. GH-C 530. Submitted under PP#3F1306 (117943).

GS0100114 Dow Chemical Co. 1974. Determination of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in green plants, kernels, kernels and cobs, cobs and husks, and husks of sweet corn grown from seed treated with Lorsban insecticide. Report No. GH-C 664. Submitted under PP#4F1445 (118404).

GS0100115 Dow Chemical Co. 1981. Residues of chlorpyrifos and 3,5,6-trichlor-2-pyridinol in field corn following multiple applications of Lorsban insecticides. Report No. GH-C 1440. Submitted under PP#1F2544 (070208).

GS0100116 Dow Chemical Co. 1981. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in corn process fractions following treatement of grain with Lorsban 4E insecticide. Report No. GH-C 1465. Submitted under PP#1F2544 (070208).

GS0100117 Dow Chemical Co. 1976. Report No. GH-C 900: Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in sorghum green plant, silage, dry plant, and grain following multiple applications with Lorsban insecticide. Submitted under PP#6F1830.

GS0100118 Dow Chemical Co. 1978. Report No. GH-C 1109: Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in grain and milling fractions following multiple applications of Lorsban 4E insecticide to sorghum. Submitted under PP#6F1830 (097128).

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GS0100122 McKellar, R.L. and Dishburger, H.J. 1974. Determination of residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in cottonseed and gin trash following multiple treatments of cotton plants with Lorsban insecticide. Submitted by Dow Chemical Co. under PP#6F1673.

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GS0100126 Dow Chemical Co. 1983. Tables 3439E, 3439F, 4903I/I, 4903II/E, 4903II/G, 5470D in section of PP#3E2766 (071167).

GS0100127 IR-4 Rutgers University. 1980. Residue data sheets. Section D. PP#0E2372 (099448).

GS0100128 Miller, P.W. 1980. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in peanut oil fractions. Report No. GH-C 1278 submitted by Dow Chemical Co. under PP#9F2193/9H5226 (099201).

GS0100129 Miller, P.W. 1979. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in or on peanuts receiving one or two applications of Lorsban insecticides. Report No. GH-C 1173 submitted by Dow Chemical Co. under PP#9F2193 (09038).

GS0100130 Miller, P.W. 1979. Residues of chlorpyrifos and 3,5,6-trichloro-2-pyridinol in peanut fractions. Report No. GH-C 1199 submitted by Dow Chemical Co. under PP#9F2193 (098335).

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APPENDIX II-2

OMB Approval No. 2000-0468 (Expires 12-31-83)

FIFRA SECTION 3(C)(2)(B) SUMMARY SHEET

EPA REGISTRATION NO.

PRODUCT NAME

APPLICANT'S NAME

DATE GUIDANCE DOCUMENT ISSUED

With respect to the requirement to submit "generic" data imposed by the FIFRA section 3(C)(2)(B) notice contained in the referenced Guidance Document, I am responding in the following manner:

☐ 1. I will submit data in a timely manner to satisfy the following requirements. If the test procedures I will use deviate from (or are not specified in) the Registration Guidelines or the Protocols contained in the Reports of Expert Groups to the Chemicals Group, OECD Chemicals Testing Programme, I enclose the protocols that I will use:

☐ 2. I have entered into an agreement with one or more other registrants under FIFRA section 3(C)(2)(B)(ii) to satisfy the following data requirements. The tests, and any required protocols, will be submitted to EPA by:

NAME OF OTHER REGISTRANT

☐ 3. I enclose a completed "Certification of Attempt to Enter Into an Agreement with Other Registrants for Development of Data" with respect to the following data requirements:

☐ 4. I request that you amend my registration by deleting the following uses (this option is not available to applicants for new products):

☐ 5. I request voluntary cancellation of the registration of this product. (This option is not available to applicants for new products.)

REGISTRANT'S AUTHORIZED REPRESENTATIVE

SIGNATURE

DATE

EPA Form 8580-1 (10-82)

APPENDIX II-3

OMB Approval No. 2000-0468 (Expires: 12-31-83)

CERTIFICATION OF ATTEMPT TO ENTER INTO AN AGREEMENT WITH OTHER REGISTRANTS FOR DEVELOPMENT OF DATA

(To qualify, certify ALL four items)

1. I am duly authorized to represent the following firm(s) who are subject to the requirements of a Notice under FIFRA Section 3(c)(2)(B) contained in a Guidance Document to submit data concerning the active ingredient:	GUIDANCE DOCUMENT DATE ACTIVE INGREDIENT
NAME OF FIRM	**EPA COMPANY NUMBER**

(This firm or group of firms is referred to below as "my firm".)

2. My firm is willing to develop and submit the data as required by that Notice, if necessary. However, my firm would prefer to enter into an agreement with one or more other registrants to develop jointly, or to share in the cost of developing, the following required items or data:

3. My firm has offered in writing to enter into such an agreement. Copies of the offers are attached. That offer was irrevocable and included an offer to be bound by an arbitration decision under FIFRA Section 3(c)(2)(B)(iii) if final agreement on all terms could not be reached otherwise. This offer was made to the following firm(s) on the following date(s):

NAME OF FIRM	DATE OF OFFER

However, none of those firm(s) accepted my offer.

4. My firm requests that EPA not suspend the registration(s) of my firm's product(s), if any of the firms named in paragraph (3) a have agreed to submit the data listed in paragraph (2) above in accordance with the Notice. I understand EPA will promptly info me whether my firm must submit data to avoid suspension of its registration(s) under FIFRA Section 3(c)(2)(B). (This statement does not apply to applicants for new products.) I give EPA permission to disclose this statement upon request.

TYPED NAME	SIGNATURE	DATE

EPA Form 8580-6 (10-82)

Appendix III-1

PRODUCT SPECIFIC DATA REPORT

EPA Registration No.______________Guidance Document for________________________

Date________________________

Registration Guideline No.	Name of Test	Test not required for my product listed above (check below)	I am complying with data requirements by Citing MRID# or "GS"#	I am complying with data requirements by Submitting Data (Attached)	(For EPA Use Only) Accession Numbers Assigned
§158.20 PRODUCT CHEMISTRY					
61-1	Identity of ingredients				
61-2	Statement of composition				
61-3	Discussion of formation of ingredients				
62-1	Preliminary analysis				
62-2	Certification of limits				
62-3	Analytical methods for enforcement limits				
63-2	Color				
63-3	Physical state				
63-4	Odor				
63-5	Melting point				
63-6	Boiling point				
63-7	Density, bulk-density, or specific gravity				
63-8	Solubility				
63-9	Vapor pressure				
63-10	Dissociation constant				
63-11	Octanol/water partition coefficient				
63-12	pH				
63-13	Stability				
63-14	Oxidizing/reducing reaction				
63-15	Flammability				
63-16	Explodability				
63-17	Storage stability				
63-18	Viscosity				

63-19	Miscibility				
63-20	Corrosion characteristics				
63-21	Dielectric breakdown voltage				
§158.135 TOXICOLOGY					
81-1	Acute oral LD-50, rat				
81-2	Acute dermal LD-50				
81-3	Acute inhalation, LC-50 rat				
81-4	Primary eye irritation, rabbit				
81-5	Primary dermal irritation				
81-6	Dermal sensitization				

set in type of the same minimum sizes as required for the child hazard warning (See Table in § 162.10(h)(1)(iv).)

(x) Any limitations or restrictions on use required to prevent unreasonable adverse effects, such as:

(A) Required intervals between application and harvest of food or feed crops.

(B) Rotational crop restrictions.

(C) Warnings as required against use on certain crops, animals, objects, or in or adjacent to certain areas.

(D) [Reserved]

(E) For restricted use pesticides, a statement that the pesticide may be applied under the direct supervision of a certified applicator who is not physically present at the site of application but nonetheless available to the person applying the pesticide, unless the Agency has determined that the pesticide may only be applied under the direct supervision of a certified applicator who is physically present.

(F) Other pertinent information which the Administrator determines to be necessary for the protection of man and the environment.

(j) *Statement of Use Classification.* By October 22, 1976, all pesticide products must bear on their labels a statement of use classification as described in paragraphs (j)(1) and (2) of this section. Any pesticide product for which some uses are classified for general use and others for restricted use shall be separately labeled according to the labeling standards set forth in this subsection, and shall be marketed as separate products with different registration numbers, one bearing directions only for general use(s) and the other bearing directions for restricted use(s) except that, if a product has both restricted use(s) and general use(s), both of these uses may appear on a product labeled for restricted use. Such products shall be subject to the provisions of § 162.10(j)(2).

(1) *General Use Classification.* Pesticide products bearing directions for use(s) classified general shall be labeled with the exact words "General Classification" immediately below the heading "Directions for Use." And reference to the general classification that suggests or implies that the general utility of the pesticide extends beyond those purposes and uses contained in the Directions for Use will be considered a false or misleading statement under the statutory definitions of misbranding.

(2) *Restricted Use Classification.* Pesticide products bearing direction for use(s) classified restricted shall bear statements of restricted use classification on the front panel as described below:

(i) *Front panel statement of restricted use classification.* (A) At the top of the front panel of the label, set in type of the same minimum sizes as required for human hazard signal words (see table in § 162.10(h)(1)(iv)), and appearing with sufficient prominence relative to other text and graphic material on the front panel to make it unlikely to be overlooked under customary conditions of purchase and use, the statement "Restricted Use Pesticide" shall appear.

(B) Directly below this statement on the front panel, a summary statement of the terms of restriction imposed as a precondition to registration shall appear. If use is restricted to certified applicators, the following statement is required: "For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification." If, however, other regulatory restrictions are imposed, the Administrator will define the appropriate wording for the terms of restriction by regulation.

(k) Advertising [Reserved]

[40 FR 28268, July 3, 1975; 40 FR 32329, Aug. 1, 1975; 40 FR 36571, Aug. 21, 1975, as amended at 43 FR 5786, Feb. 9, 1978] tions to avoid potential accident, injury or damage. Examples of the hazard statements and the circumstances under which they are required follow:

(A) If a pesticide intended for outdoor use contains an active ingredient with a mammalian acute oral LD₅₀ of 100 or less, the statement "This Pesticide is Toxic to Wildlife" is required.

(B) If a pesticide intended for outdoor use contains an active ingredient with a fish acute LC₅₀ of 1 ppm or less, the statement "This Pesticide is Toxic to Fish" is required.

(C) If a pesticide intended for outdoor use contains an active ingredient with an avian acute oral LD₅₀ of 100 mg/kg or less, or a subacute dietary LC₅₀ of 500 ppm or less, the statement "This Pesticide is Toxic to Wildlife" is required.

(D) If either accident history or field studies demonstrate that use of the pesticide may result in fatality to birds, fish or mammals, the statement "This pesticide is extremely toxic to wildlife (fish)" is required.

(E) For uses involving foliar application to agricultural crops, forests, or shade trees, or for mosquito abatement treatments, pesticides toxic to pollinating insects must bear appropriate label cautions.

(F) For all outdoor uses other than aquatic applications the label must bear the caution "Keep out of lakes, ponds or streams. Do not contaminate water by cleaning of equipment or disposal of wastes."

(iii) *Physical or chemical hazards.* Warning statements on the flammability or explosive characteristics of the pesticide are required as follows:

(A) PRESSURIZED CONTAINERS

Flash point at or below 20° F; if there is a flashback at any valve opening.	Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130° F may cause bursting.
Flash point above 20° F and not over 80° F or if the flame extension is more than 18 in long at a distance of 6 in from the flame.	Flammable. Contents under pressure. Keep away from heat, sparks, and open flame. Do not puncture or incinerate container. Exposure to temperatures above 130° F may cause bursting.
All other pressurized containers	Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130° F may cause bursting.

(B) NONPRESSURIZED CONTAINERS

Flash point	*Required text*
At or below 20° F	Extremely flammable. Keep away from fire, sparks, and heated surfaces.
Above 20° F and not over 80° F	Flammable. Keep away from heat and open flame.
Above 80° F and not over 150° F	Do not use or store near heat or open flame.

(i) *Directions for Use*—(1) *General requirements*—(i) *Adequacy and clarity of directions.* Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment.

(ii) *Placement of directions for use.* Directions may appear on any portion of the label provided that they are conspicuous enough to be easily read by the user of the pesticide product. Directions for use may appear on printed or graphic matter which accompanies the pesticide provided that:

(A) If required by the Agency, such printed or graphic matter is securely attached to each package of the pesticide, or placed within the outside wrapper or bag;

(B) The label bears a reference to the directions for use in accompanying leaflets or circulars, such as "See directions in the enclosed circular:" and

(C) The Administrator determines that it is not necessary for such directions to appear on the label.

(iii) *Exceptions to requirement for direction for use*—(A) Detailed directions for use may be omitted from labeling of pesticides which are intended for use only by manufacturers of products other than pesticide products in their regular manufacturing processes, provided that:

(*1*) The label clearly shows that the product is intended for use only in manufacturing processes and specifies the type(s) of products involved.

(*2*) Adequate information such as technical data sheets or bulletins, is available to the trade specifying the type of product involved and its proper use in manufacturing processes;

(*3*) The product will not come into the hands of the general public except after incorporation into finished products; and

(*4*) The Administrator determines that such directions are not necessary to prevent unreasonable adverse effects on man or the environment.

(B) Detailed directions for use may be omitted from the labeling of pesticide products for which sale is limited to physicians, veterinarians, or druggists, provided that:

(*1*) The label clearly states that the product is for use only by physicians or veterinarians;

(*2*) The Administrator determines that such directions are not necessary to prevent unreasonable adverse effects on man or the environment; and

(*3*) The product is also a drug and regulated under the provisions of the Federal Food, Drug and Cosmetic Act.

(C) Detailed directions for use may be omitted from the labeling of pesticide products which are intended for use only by formulators in preparing pesticides for sale to the public, provided that:

(*1*) There is information readily available to the formulators on the composition, toxicity, methods of use, applicable restrictions or limitations, and effectiveness of the product for pesticide purposes;

(*2*) The label clearly states that the product is intended for use only in manufacturing, formulating, mixing, or repacking for use as a pesticide and specifies the type(s) of pesticide products involved;

(*3*) The product as finally manufactured, formulated, mixed, or repackaged is registered; and

(*4*) The Administrator determines that such directions are not necessary to prevent unreasonable adverse effects on man or the environment.

(2) *Contents of Directions for Use.* The directions for use shall include the following, under the headings "Directions for Use":

(i) The statement of use classification as prescribed in 162.10(j) immediately under the heading "Directions for Use."

(ii) Immediately below the statement of use classification, the statement "It is a violation of Federal law to use this product in a manner inconsistent with its labeling."

(iii) The site(s) of application, as for example the crops, animals, areas, or objects to be treated.

(iv) The target pest(s) associated with each site.

(v) The dosage rate associated with each site and pest.

(vi) The method of application, including instructions for dilution, if required, and type(s) of application apparatus or equipment required.

(vii) The frequency and timing of applications necessary to obtain effective results without causing unreasonable adverse effects on the environment.

(viii) Specific limitations on reentry to areas where the pesticide has been applied, meeting the requirements concerning reentry provided by 40 CFR Part 170.

(ix) Specific directions concerning the storage and disposal of the pesticide and its container, meeting the requirements of 40 CFR Part 165. These instructions shall be grouped and appear under the heading "Storage and Disposal." This heading must be those required on the front panel of the labeling and those which may appear elsewhere. Specific requirements concerning content, placement, type size, and prominence are given below.

(1) *Required front panel statements.* With the exception of the child hazard warning statement, the text required on the front panel of the label is determined by the Toxicity Category of the pesticide. The category is assigned on the basis of the highest hazard shown by any of the indicators in the table below:

Hazard indicators	Toxicity categories			
	I	II	III	IV
Oral LD₅₀	Up to and including 50 mg/kg.	From 50 thru 500 mg/kg	From 500 thru 5000 mg/kg.	Greater than 5000 mg/kg.
Inhalation LC₅₀	Up to and including .2 mg/liter.	From .2 thru 2 mg/liter	From 2 thru 20 mg/liter.	Greater than 20 mg/liter.
Dermal LD₅₀	Up to and including 200 mg/kg.	From 200 thru 2000	From 2,000 thru 20,000	Greater than 20,000.
Eye effects	Corrosive; corneal opacity not reversible within 7 days.	Corneal opacity reversible within 7 days; irritation persisting for 7 days.	No corneal opacity; irritation reversible within 7 days.	No irritation.
Skin effects	Corrosive	Severe irritation at 72 hours.	Moderate irritation at 72 hours.	Mild or slight irritation at 72 hours.

(i) *Human hazard signal word*—(A) *Toxicity Category I.* All pesticide products meeting the criteria of Toxicity Category I shall bear on the front panel the signal word "Danger." In addition if the product was assigned to Toxicity Category I on the basis of its oral, inhalation or dermal toxicity (as distinct from skin and eye local effects) the word "Poison" shall appear in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word "poison."

(B) *Toxicity Category II.* All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word "Warning."

(C) *Toxicity Category III.* All pesticide products meeting the criteria of Toxicity Category III shall bear on the front panel the signal word "Caution."

(D) *Toxicity Category IV.* All pesticide products meeting the criteria of Toxicity Category IV shall bear on the front panel the signal word "Caution."

(E) *Use of signal words.* Use of any signal word(s) associated with a higher Toxicity Category is not permitted except when the Agency determines that such labeling is necessary to prevent unreasonable adverse effects on man or the environment. In no case shall more than one human hazard signal word appear on the front panel of a label.

(ii) *Child hazard warning.* Every pesticide product label shall bear on the front panel the statement "keep out of reach of children." Only in cases where the likelihood of contact with children during distribution, marketing, storage or use is demonstrated by the applicant to be extremely remote, or if the nature of the pesticide is such that it is approved for use on infants or small children, may the Administrator waive this requirement.

(iii) *Statement of practical treatment*—(A) *Toxicity Category I.* A statement of practical treatment (first aid or other) shall appear on the front panel of the label of all pesticides falling into Toxicity Category I on the basis of oral, inhalation or dermal toxicity. The Agency may, however, permit reasonable variations in the placement of the statement of practical treatment is some reference such as "See statement of practical treatment on back panel" appears on the

front panel near the word "Poison" and the skull and crossbones.

(B) *Other toxicity categories.* The statement of practical treatment is not required on the front panel except as described in paragraph (h)(1)(iii)(A) of this section. The applicant may, however, include such a front panel statement at his option. Statements of practical treatment are, however, required elsewhere on the label in accord with paragraph (h)(2) of this section if they do not appear on the front panel.

(iv) *Placement and prominence.* All the required front panel warning statements shall be grouped together on the label, and shall appear with sufficient prominence relative to other front panel text and graphic material to make them unlikely to be overlooked under customary conditions of purchase and use. The following table shows the minimum type size requirements for the front panel warning statements on various sizes of labels:

Size of label front panel in square inches	Required signal word, all capitals	"Keep out of reach of Children"
	Points	Points
5 and under	6	6
Above 5 to 10	10	6
Above 10 to 15	12	8
Above 15 to 30	14	10
Over 30	18	12

(2) *Other required warnings and precautionary statements.* The warnings and precautionary statements as required below shall appear together on the label under the general heading "Precautionary Statements" and under appropriate subheadings of "Hazard to Humans and Domestic Animals," "Environmental Hazard" and "Physical or Chemical Hazard."

(i) *Hazard to humans and domestic animals.* (A) Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions to be taken to avoid accident, injury or damage. The precautionary paragraph shall be immediately preceded by the appropriate hazard signal word.

(B) The following table depicts typical precautionary statements. These statements must be modified or expanded to reflect specific hazards.

Toxicity category	Precautionary statements by toxicity category	
	Oral, inhalation, or dermal toxicity	Skin and eye local effects.
I	Fatal (poisonous) if swallowed [inhaled or absorbed through skin]. Do not breathe vapor [dust or spray mist]. Do not get in eyes, on skin, or on clothing. [Front panel statement of practical treatment required.]	Corrosive, causes eye and skin damage [or skin irritation]. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. [Appropriate first aid statement required.]
II	May be fatal if swallowed [inhaled or absorbed through the skin]. Do not breathe vapors [dust or spray mist]. Do not get in eyes, on skin, or on clothing. [Appropriate first aid statements required.]	Causes eye [and skin] irritation. Do not get in eyes, on skin, or on clothing. Harmful if swallowed. [Appropriate first aid statement required.]
III	Harmful if swallowed [inhaled or absorbed through the skin]. Avoid breathing vapors [dust or spray mist]. Avoid contact with skin [eyes or clothing]. [Appropriate first aid statement required.]	Avoid contact with skin, eyes or clothing. In case of contact immediately flush eyes or skin with plenty of water. Get medical attention if irritation persists.
IV	[No precautionary statements required.]	[No precautionary statements required.]

(ii) *Environmental hazards.* Where a hazard exists to non target organisms excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precau-

130

(vii) A true statement used in such a way as to give a false or misleading impression to the purchaser;

(viii) Label disclaimers which negate or detract from labeling statements required under the Act and these regulations;

(ix) Claims as to the safety of the pesticide or its ingredients, including statements such as "safe," "nonpoisonous," "noninjurious," "harmless" or "nontoxic to humans and pets" with or without such a qualifying phrase as "when used as directed"; and

(x) Non-numerical and/or comparative statements on the safety of the product, including but not limited to:

(A) "Contains all natural ingredients";

(B) "Among the least toxic chemicals known"

(C) "Pollution approved"

(5) *Final printed labeling.* (i) Except as provided in paragraph (a)(5)(ii) of this section, final printed labeling must be submitted and accepted prior to registration. However, final printed labeling need not be submitted until draft label texts have been provisionally accepted by the Agency.

(ii) Clearly legible reproductions or photo reductions will be accepted for unusual labels such as those silk-screened directly onto glass or metal containers or large bag or drum labels. Such reproductions must be of microfilm reproduction quality.

(b) *Name, brand, or trademark.* (1) The name, brand, or trademark under which the pesticide product is sold shall appear on the front panel of the label.

(2) No name, brand, or trademark may appear on the label which:

(i) Is false or misleading, or

(ii) Has not been approved by the Administrator through registration or supplemental registration as an additional name pursuant to § 162.6(b)(4).

(c) *Name and address of producer, registrant, or person for whom produced.* An unqualified name and address given on the label shall be considered as the name and address of the producer. If the registrant's name appears on the label and the registrant is not the producer, or if the name of the person for whom the pesticide was produced appears on the label, it must be qualified by appropriate wording such as "Packed for * * *," "Distributed by * * *," or "Sold by * * *" to show that the name is not that of the producer.

(d) *Net weight or measure of contents.* (1) The net weight or measure of content shall be exclusive of wrappers or other materials and shall be the average content unless explicitly stated as a minimum quantity.

(2) If the pesticide is a liquid, the net content statement shall be in terms of liquid measure at 68° F (20°C) and shall be expressed in conventional American units of fluid ounces, pints, quarts, and gallons.

(3) If the pesticide is solid or semisolid, viscous or pressurized, or is a mixture of liquid and solid, the net content statement shall be in terms of weight expressed as avoirdupois pounds and ounces.

(4) In all cases, net content shall be stated in terms of the largest suitable units, i.e., "1 pound 10 ounces" rather than "26 ounces."

(5) In addition to the required units specified, net content may be expressed in metric units.

(6) Variation above minimum content or around an average is permissible only to the extent that it represents deviation unavoidable in good manufacturing practice. Variation below a stated minimum is not permitted. In no case shall the average content of the packages in a shipment fall below the stated average content.

(e) *Product registration number.* The registration number assigned to the pesticide product at the time of registration shall appear on the label, preceded by the phrase "EPA Registration No.," or the phrase "EPA Reg. No." The registration number shall be set in type of a size and style similar to other print on that part of the label on which it appears and shall run parallel to it. The registration number and the required identifying phrase shall not appear in such a manner as to suggest or imply recommendation or endorsement of the product by the Agency.

(f) *Producing establishments registration number.* The producing establishment registration number preceded by the phrase "EPA Est.", of the

final establishment at which the product was produced may appear in any suitable location on the label or immediate container. It must appear on the wrapper or outside container of the package if the EPA establishment registration number on the immediate container cannot be clearly read through such wrapper or container.

(g) *Ingredient statement*—(1) *General.* The label of each pesticide product must bear a statement which contains the name and percentage by weight of each active ingredient, the total percentage by weight of all inert ingredients; and if the pesticide contains arsenic in any form, a statement of the percentages of total and water-soluble arsenic calculated as elemental arsenic. The active ingredients must be designated by the term "active ingredients" and the inert ingredients by the term "inert ingredients," or the singular forms of these terms when appropriate. Both terms shall be in the same type size, be aligned to the same margin and be equally prominent. The statement "Inert ingredients, none" is not required for pesticides which contain 100 percent active ingredients. Unless the ingredient statement is a complete analysis of the pesticide, the term "analysis" shall not be used as a heading for the ingredient statement.

(2) *Position of ingredient statement.* (i) The ingredient statement is normally required on the front panel of the label. If there is an outside container or wrapper through which the ingredient statement cannot be clearly read, the ingredient statement must also appear on such outside container or wrapper. If the size or form of the package makes it impracticable to place the ingredient statement on the front panel of the label, permission may be granted for the ingredient statement to appear elsewhere.

(ii) The text of the ingredient statement must run parallel with other text on the panel on which it appears, and must be clearly distinguishable from and must not be placed in the body of other text.

(3) *Names to be used in ingredient statement.* The name used for each ingredient shall be the accepted common name, if there is one, followe[illegible] the chemical name. The common name may be used alone only if it is well known. If no common name has been established, the chemical name alone shall be used. In no case will the use of a trademark or proprietary name be permitted unless such name has been accepted as a common name by the Administrator under the authority of Section 25(c)(6).

(4) *Statements of percentages.* The percentages of ingredients shall be stated in terms of weight-to-weight. The sum of percentages of the active and the inert ingredients shall be 100. Percentages shall not be expressed by a range of values such as "22-25%." If the uses of the pesticide product are expressed as weight of active ingredient per unit area, a statement of the weight of active ingredient per unit volume of the pesticide formulation shall also appear in the ingredient statement.

(5) *Accuracy of stated percentages.* The percentages given shall be as precise as possible reflecting good manufacturing practice. If there may be unavoidable variation between manufacturing batches, the value stated for each active ingredient shall be the lowest percentage which may be present.

(6) *Deterioration.* Pesticides which change in chemical composition significantly must meet the following labeling requirements:

(i) In cases where it is determined that a pesticide formulation changes chemical composition significantly, the product must bear the following statement in a prominent position on the label: "Not for sale or use after [date]."

(ii) The product must meet all label claims up to the expiration time indicated on the label.

(7) *Inert ingredients.* The Administrator may require the name of any inert ingredient(s) to be listed in the ingredient statement if he determines that such ingredient(s) may pose a hazard to man or the environment.

(h) *Warnings and precautionary statements.* Required warnings and precautionary statements concerning the general areas of toxicological hazard including hazard to children, environmental hazard, and physic chemical hazard fall into two gr cacy, and safety of the formulated end-use product, may not consider any data as supporting the application, except the following data:

(1) The data the applicant has submitted to EPA under paragraph (b) of this section;

(2) Other data pertaining to the safety of the product's active ingredients, rather than to the safety of the end-use product; and

(3) Existing tolerances, food additive regulations, exemptions, and other clearances issued under the Federal Food, Drug, and Cosmetic Act.

(e) If the applicant knows that any item of data he submitted under this section was generated by (or at the expense of) another person who originally submitted the data to EPA (or its predecessor, USDA) on or after January 1, 1970, to support an application for registration, experimental use permit, or amendment adding a new use to an existing registration, or for reregistration (unless the applicant and the original data submitter have reached written agreement on the amount and the terms of payment of any compensation that may be payable under FIFRA section 3(c)(1)(D)(ii) with regard to approval of the application), the applicant shall submit to EPA a statement that he has furnished to each such identified original data submitter:

(1) A notification of the applicant's intent to apply for registration, including the proposed product name;

(2) An offer to pay the person compensation, with regard to the approval of the application, to the extent required by FIFRA sections 3(c)(1)(D) and 3(c)(2)(D);

(3) An identification of the item(s) of data to which the offer applies;

(4) An offer to commence negotiations to ascertain the amount and terms of compensation to be paid; and

(5) The applicant's name, address, and telephone number.

(f) If the applicant's product contains any active ingredient other than those that are present solely because of the incorporation into the product, during formulation, of one or more other registered pesticide products purchased from another producer, then the applicant shall also comply with § 162.9-5 as to such active ingredient, and the application shall contain an acknowledgment that for purposes of FIFRA section 3(c)(1)(D) the application relies on (and any resulting registration should be regarded as if it were based on the Administrator's consideration of) the following data:

(1) All data submitted or specifically cited by the applicant in support of the registration; and

(2) Each other item of data in the Agency's files which:

(i) Concerns the properties or effects of any such active ingredient; and

(ii) Is one of the types of data that EPA would require to be submitted for scientific review by EPA if the applicant sought the initial registration under FIFRA Section 3(c)(5) of a product with composition and intended uses identical to those proposed for the applicant's product, under the data requirements in effect on the date EPA approves the applicant's present application.

(Secs. 3, 6, and 25 of FIFRA, as amended, 7 U.S.C. 136 *et seq.*)

[44 FR 27963, May 11, 1979]

§ 162.10 Labeling requirements.

(a) *General*—(1) *Contents of the label.* Every pesticide products shall bear a label containing the information specified by the Act and the regulations in this Part. The contents of a label must show clearly and prominently the following:

(i) The name, brand, or trademark under which the product is sold as prescribed in paragraph (b) of this section;

(ii) The name and address of the producer, registrant, or person for whom produced as prescribed in paragraph (c) of this section;

(iii) The net contents as prescribed in paragraph (d) of this section;

(iv) The product registration number as prescribed in paragraph (e) of this section;

(v) The producing establishment number as prescribed in paragraph (f) of this section;

(vi) An ingredient statement as prescribed in paragraph (g) of this section;

(vii) Warning or precautionary statements as prescribed in paragraph (h) of this section;

(viii) The directions for use as prescribed in paragraph (i) of this section; and

(ix) The use classification(s) as prescribed in paragraph (j) of this section.

(2) *Prominence and legibility.* (i) All words, statements, graphic representations, designs or other information required on the labeling by the Act or the regulations in this part must be clearly legible to a person with normal vision, and must be placed with such conspicuousness (as compared with other words, statements, designs, or graphic matter on the labeling) and expressed in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

(ii) All required label text must:

(A) Be set in 6-point or larger type;

(B) Appear on a clear contrasting background; and

(C) Not be obscured or crowded.

(3) *Language to be used.* All required label or labeling text shall appear in the English language. However, the Agency may require or the applicant may propose additional text in other languages as is considered necessary to protect the public. When additional text in another language is necessary, all labeling requirements will be applied equally to both the English and other-language versions of the labeling.

(4) *Placement of Label*—(i) *General.* The label shall appear on or be securely attached to the immediate container of the pesticide product. For purposes of this Section, and the misbranding provisions of the Act, "securely attached" shall mean that a label can reasonably be expected to remain affixed during the foreseeable conditions and period of use. If the immediate container is enclosed within a wrapper or outside container through which the label cannot be clearly read, the label must also be securely attached to such outside wrapper or container, if it is a part of the package as customarily distributed or sold.

(ii) *Tank cars and other bulk containers*—(A) *Transportation.* While a pesticide product is in transit, the appropriate provisions of 49 CFR Parts 170-189, concerning the transportation of hazardous materials, and specifically those provisions concerning the labeling, marking and placarding of hazardous materials and the vehicles carrying them, define the basic Federal requirements. In addition, when any registered pesticide product is transported in a tank car, tank truck or other mobile or portable bulk container, a copy of the accepted label must be attached to the shipping papers, and left with the consignee at the time of delivery.

(B) *Storage.* When pesticide products are stored in bulk containers, whether mobile or stationary, which remain in the custody of the user, a copy of the label of labeling, including all appropriate directions for use, shall be securely attached to the container in the immediate vicinity of the discharge control valve.

(5) *False or misleading statements.* Pursuant to section 2(q)(1)(A) of the Act, a pesticide or a device declared subject to the Act pursuant to § 162.15, is misbranded if its labeling is false or misleading in any particular including both pesticidal and non-pesticidal claims. Examples of statements or representations in the labeling which constitute misbranding include:

(i) A false or misleading statement concerning the composition of the product;

(ii) A false or misleading statement concerning the effectiveness of the product as a pesticide or device;

(iii) A false or misleading statement about the value of the product for purposes other than as a pesticide or device;

(iv) A false or misleading comparison with other pesticides or devices;

(v) Any statement directly or indirectly implying that the pesticide or device is recommended or endorsed by any agency of the Federal Government;

(vi) The name of a pesticide which contains two or more principal active ingredients if the name suggests one or more but not all such principal active ingredients even though the names of the other ingredients are stated elsewhere in the labeling;

LABELING REQUIREMENTS OF THE FIFRA, AS AMENDED (REFER TO THE SAMPLE LABELS FOLLOWING)

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
1	Product name	All products	Front panel	Center front panel	
2	Company name and address	All products	None	Bottom front panel or end of label text	If registrant is not the producer, must be qualified by "Packed for . . .," "Distributed by. . .," etc.
3	Net contents	All products	None	Bottom front panel or end of label text	May be in metric units in addition to U.S. units
4	EPA Est. No.	All products	None	Front panel	Must be in similar type size and run parallel to other type.
5	EPA Reg. No.	All products	None	Front panel, immediately before or following Reg. No.	May appear on t the label.
	Ingredients statement	All products	Front panel	Immediately following product name	Text must run parallel with other text on the panel.
6B	Pounds/gallon statement	Liquid products where dosage given as lbs. ai/unit area	Front panel	Directly below the main ingredients statement	
7	Front panel precautionary statements	All products	Front panel		All front panel precautionary statements must be grouped blocked.
7A	Keep Out of Reach of Children (Child hazard warning)	All products	Front panel	Above signal word	Note type size requirements.
7B	Signal word	All products	Front panel	Immediately below child hazard warning	Note type size requirements.

APPENDIX IV-2 (continued)

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
7C	Skull & crossbones and word POISON (in red)	All products which are Category I based on oral, dermal, or inhalation toxicity	Front panel	Both in close proximity to signal word	
7D	Statement of practical treatment	All products in Categories I, II, and III	Category I: Front panel unless referral statement is used. Others: Grouped with side panel precautionary statements.	Front panel for all.	
7E	Referral statement	All products where precautionary labeling appears on other than front panel.	Front panel		
8	Side/back panel precautionary statements	All products	None	Top or side of back panel preceding directions for use	Must be grouped under the headings in 8A, 8B, and 8C; preferably blocked.
8A	Hazards to humans and domestic animals	All products in Categories I, II, and III	None	Same as above	Must be preceded by appropriate signal word.
8B	Environmental hazards	All products	None	Same as above	Environmental hazards include bee caution where applicable.

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
8C	Physical or chemical hazards	All pressurized products, others with flash points under 150°F	None	Same as above	
9A	Restricted block	All restricted products	Top center of front panel	Preferably blocked	Includes a statement of the terms of restriction. The words "RESTRICTED USE PESTICIDE" must be same type size as signal word.
9C	Misuse statement	All products	Immediately following statement of classification or ahead of directions for use		
10A	Re-entry statement	All cholinesterase inhibitors	In the directions for use	Immediately after misuse statement	
10C	Storage and disposal block	All products	In the directions for use	Immediately before specific directions for use or at the end of directions for use	Must be set apart and clearly distinguishable from from other directions for use.
10D U.S.	Directions for use	All products	None	None	May be in metric as well as U.S. units

Appendix IV-3

PHYSICAL-CHEMICAL HAZARDS

Criteria	Required Label Statement
I. Pressurized Containers	
A. Flashpoint at or below 20°F; or if there is a flashback at any valve opening.	Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
B. Flashpoint above 20°F and not over 80°F; or if the flame extension is more than 18 inches long at a distance of 6 inches from the valve opening.	Flammable. Contents under pressure. Keep away from heat, sparks, and flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
C. ALL OTHER PRESSURIZED CONTAINERS	Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
II. Non-Pressurized Containers	
A. Flashpoint at or below 20°F.	Extremely flammable. Keep away from fire, sparks, and heated surfaces.
B. Flashpoint above 20°F and over 80°F.	Flammable. Keep away from heat and open flame.
C. Flashpoint over 80°F and not over 150°F.	Do not use or store near heat and open flame.
D. Flashpoint above 150°F.	None required.

STORAGE AND DISPOSAL INSTRUCTIONS FOR PESTICIDES

All products are required to bear specific label instructions about storage and disposal. Storage and disposal instructions must be grouped together in the directions for use portion of the label under the heading STORAGE AND DISPOSAL. Products intended solely for domestic use need not include the heading "STORAGE AND DISPOSAL." The STORAGE AND DISPOSAL heading must appear in the minimum type size listed below:

Size of label front panel in square inches	Required type size for the heading STORAGE AND DISPOSAL (all capitals)
10 and under	.6 point
Above 10 to 15	.8 point
Above 15 to 30	10 point
Over 30	12 point

Storage and disposal instructions must be set apart and clearly distinguishable from other directions for use. Blocking storage and disposal statements with a solid line is suggested as a means of increasing their prominence.

A. Storage Instructions:

All product labels are required to have appropriate storage instructions. Specific storage instructions are not prescribed. Each registrant must develop his own storage instructions, considering, when applicable, the following factors:

1. Conditions of storage that might alter the composition or usefulness of the pesticide. Examples could be temperature extremes, excessive moisture or humidity, heat, sunlight, friction, or contaminating substances or media.

2. Physical requirements of storage which might adversely affect the container of the product and its ability to continue to function properly. Requirements might include positioning of the container in storage, storage or damage due to stacking, penetration of moisture, and ability to withstand shock or friction.

3. Specifications for handling the pesticide container, including movement of container within the storage area, proper opening and closing procedures (particularly for opened containers), and measures to minimize exposure while opening or closing container.

4. Instructions on what to do if the container is damaged in any way, or if the pesticide is leaking or has been spilled, and precautions to minimize exposure if damage occurs.

5. General precautions concerning locked storage, storage in original container only, and separation of pesticides during storage to prevent cross-contamination of other pesticides, fertilizer, food, and feed.

6. General storage instructions for household products should emphasize storage in original container and placement in locked storage areas.

B. Pesticide Disposal Instructions:

The label of all products, except those intended solely for domestic use, must bear explicit instructions about pesticide disposal. The statements listed below contain the exact wording that must appear on the label of these products:

1. The labels of all products, except domestic use, must contain the statement, "Do not contaminate water, food, or feed by storage or disposal."

2. Except those products intended solely for domestic use, the labels of all products that contain active ingredients appearing on the "Acutely Hazardous" Commercial Pesticide Products List (RCRA "E" List) at the end of this appendix or are assigned to Toxicity Category I on the basis of oral or dermal toxicity, skin or eye irritation potential, or Toxicity Category I or II on the basis of acute inhalation toxicity must bear the following pesticide disposal statement:

   "Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

   The labels of all products, except those intended for domestic use, containing active or inert ingredients that appear on the "Toxic" Commercial Pesticide Products List (RCRA "F" List) at the end of this appendix or presently meet any of the criteria in Subpart C, 40 CFR 261 for a hazardous waste must bear the following pesticide disposal statement:

"Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

Labels for all other products, except those intended for domestic use, must bear the following pesticide disposal statement:

"Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility."

3. Products intended for domestic use only must bear the following disposal statement: "Securely wrap original container in several layers of newspaper and discard in trash."

C. Container Disposal Instructions

The label of each product must bear container disposal instructions appropriate to the type of container.

1. All products intended for domestic use must bear one of the following container disposal statements:

Container Type	Statement
Non-aerosol products (bottles, cans, jars)	Do not reuse container (bottle, can, jar). Rinse thoroughly before discarding in trash.
Non-aerosol products (bags)	Do not reuse bag. Discard bag in trash.
Aerosol products	Replace cap and discard containers in trash. Do not incinerate or puncture.

2. The labels for all other products must bear container disposal instructions, based on container type, listed below:

Container Type	Statement
Metal containers (non-aerosol)	Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.
Plastic containers	Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.
Glass containers	Triple rinse (or equivalent). Then dispose of in a sanitary landfill or by other approved state and local procedures.

Container Type	Statement
Fiber drums with liners	Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by state and local authorities. If drum is contaminated and cannot be reused[1], dispose of in the same manner.
Paper and plastic bags	Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.
Compressed gas cylinders	Return empty cylinder for reuse (or similar wording).

[1] Manufacturer may replace this phrase with one indicating whether and how fiber drum may be reused.

2. The labels for all other products must bear container disposal instructions, based on container type, listed on the first page of this Appendix.

"Toxic" Commercial Pesticide Products (RCRA "F" List) Active Ingredients:

Acetone
Acrylonitrile
Amitrole
Benzene
Bis(2-ethylhexyl)pthalate
Cacodylic acid
Carbon tetrachloride
Chloral (hydrate)
Chlordane (technical)
Chlorobenzene
4-Chloro-m-cresol
Chloroform
o-Chlorophenol
4-Chloro-o-toluidine hydrochloride
Creosote
Cresylic acid
Cyclohexane
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one
    (kepone, chlordecone)
1,2-Dibromo-3-chloropropane (DBCP)
Dibutyl phthalate
S-3,3-(Dichloroallyl diisopropylthiocarbamate (diallate, Avadex)
o-Dichlorobenzene
p-Dichlorobenzene
Dichlorodifluoromethane (Freon 12®)
3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide (pronamide,Kerb)
Dichloro diphenyl dichloroethane (DDD)
Dichloro diphenyl trichloroethane (DDT)
Dichlorethyl ether
2,4-Dichlorophenoxyacetic, esters and salts (2,4-D)
1,2-Dichloropropane
1,3-Dichloropropane (Telone)
Dimethyl phthalate
Ethyl acetate
Ethyl 4,4'-dichlorobenzilate (chlorobenzilate)
Ethylene dibromide (EDB)
Ethylene dichloride
Ethylene oxide
Formaldehyde
Furfural
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloroethane
Hydrofluoric acid

"Toxic" Commercial Pesticide Products (RCRA "F" List)
Active Ingredients:

Isobutyl alcohol
Lead acetate
Lindane
Maleic hydrazide
Mercury
Methyl alcohol
Methyl bromide
Methyl chloride
2,2'-Methylenebis (3,4,6-trichlorophenol) (hexachlorophene)
Methylene chloride
Methyl ethyl ketone
4-Methyl-2-pentanone (methyl isobutyl ketone)
Naphthalene
Nitrobenzene
p-Nitrophenol
Pentachloroethane
Pentachloronitrobenzene (PCNB)
Pentaclorophenol
Phenol
Phosphorodithioic acid, 0,0-diethyl, methyl ester
Propylene dichloride
Pyridine
Resorcinol
Safrole
Selenium disulfide
Silvex
1,2,4,5-Tetrachlorobenzene
1,1,2,2-Tetrachloroethane
Tetrachloroethylene
2,3,4,6-Tetrachlorophenol
Thiram
Toluene
1,1,1-Trichloroethane
Trichloroethylene
Trichloromonofluoromethane (Freon 11®)
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
Xylene

Appendix IV-5
(continued)

Pesticides that are hazardous wastes under 40 CFR 261.33(e) and (f) when discarded.

"Acutely Hazardous" Commercial Pesticides (RCRA "E" List) Active Ingredients, (no inerts):

Acrolein
Aldicarb
Aldrin
Allyl alcohol
Aluminum phosphide
4-Aminopyridine
Arsenic acid
Arsenic pentoxide
Arsenic trioxide
Calcium cyanide
Carbon disulfide
p-Chloroaniline
Cyanides (soluble cyanide salts, not specified elsewere)
Cyanogen chloride
2-Cyclohexyl-4,6-dinitrophenol
Dieldrin
0,0-Diethyl S-[2-ethylthio)ethyl] phosphorodithioate
    (disulfoton, Di-Syston)
0,0-Diethyl 0-pyrazinyl phosphorothioate (Zinophos)
Dimethoate
0,0-Dimethyl 0-p-nitrophenyl phosphorothioate (methyl parathion)
4,6-Dinitro-o-cresol and salts
4,6-Dinitro-o-cyclohexylphenol
2,4 Dinitrophenol
Dinoseb
Endosulfan
Endothall
Endrin
Famphur
Fluoroacetamide
Heptachlor
Hexanethyl tetraphosphate
Hydrocyanic acid
Hydrogen cyanide
Methomyl
alpha-Naphthylthiourea (ANTU)
Nicotine and salts
Octamethylpyrophosphoramide (OMPA, schradan)
Parathion

"Acutely Hazardous" Commercial Pesticides (RCRA "E" List) Active Ingredients continued:

Phenylmercuric acetate (PMA)
Phorate
Potassium cyanide
Propargyl alcohol
Sodium azide
Sodium cyanide
Sodium fluoroacetate
Strychnine and salts
0,0,0,0-Tetraethyl dithiopyrophosphate (sulfotepp)
Tetraethyl pyrophosphate
Thallium sulfate
Thiofanox
Toxaphene
Warfarin
Zinc phosphide

There are currently no inert ingredients for commercial pesticides on the "Acutely Hazardous" List (RCRA "E" List).

Appendix IV-5
(continued)

"Toxic" Commercial Pesticide Products (RCRA "F" List) Inert Ingredients:

Acetone
Acetonitrile
Acetophenone
Acrylic acid
Aniline
Benzene
Chlorobenzene
Chloroform
Cyclohexane
Cyclohexanone
Dichlorodifluoromethane (Freon 12®)
Diethyl phthalate
Dimethylamine
Dimethyl phthalate
1,4-Dioxane
Ethylene oxide
Formaldehyde
Formic acid
Isobutyl alcohol
Meleic anhydride
Methyl alcohol (methanol)
Methyl ethyl ketone
Methyl methacrylate
Naphthalene
Saccharin and salts
Thiourea
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichlorofluoromethane (Freon 11®)
Vinyl chloride
Xylene

NAL
AI + EC

c059101

CHLORPYRIFOS*

TYPE PESTICIDE: Insecticide, Acaricide

FORMULATIONS:
Tech (94%, 99%);
FI (0.5 lb/gal, 2.7 lb/gal, 4 lb/gal, 6 lb/gal, 0.33%, 1%, 10%, 15%, 25%, 44.8%, 50%, 52.4%);
D (0.1%, 25%);
G (0.075%, 0.14%, 0.2%, 0.23%, 0.3%, 0.33%, 0.4%, 0.46%, 0.47%, 0.5%, 0.51%, 0.52%, 0.55%, 0.57%, 0.575%, 0.6%, 0.65%, 0.7%, 0.72%, 0.75%, 0.8%, 0.85%, 0.92%, 1%, 1.14%, 1.16%, 1.2%, 1.34%, 1.35%, 2%, 2.2%, 2.3%, 2.32%, 2.5%, 5%, 10%, 15%);
P/T (1%);
WP (2.32%, 25%, 50%);
Mcap (10.6%);
Impr (0.5%, 10%);
EC (0.156 lb/gal, 0.33 lb/gal, 0.45 lb/gal, 0.5 lb/gal, 0.667 lb/gal, 1 lb/gal, 1.2 lb/gal, 2 lb/gal, 4 lb/gal, 0.51%, 2.2%, 2.35%, 2.85%, 5.3%, 5.4%, 5.65%, 6%, 6.6%, 6.7%, 6.79%, 12.3%, 14.45%, 20%, 22.4%, 23.7%, 24.9%, 25%, 41.2%);
SC/L (6 lb/gal);
RTU (0.073 lb/gal, 0.146 lb/gal, 3.8 lb/gal, 0.05%, 0.25%, 0.5%, 0.86%);
PrL (0.09%, 0.22%, 0.5%)

GENERAL WARNINGS AND LIMITATIONS: Do not use in dairy barns, poultry houses, or inside homes or buildings while food is processed. Chlorpyrifos is toxic to fish and crustaceans. Indoor use of chlorpyrifos formulations above 0.5 percent active ingredient is limited to professional pest control operators. For mosquito control, chlorpyrifos can be applied only by or under the supervision of public health organizations, mosquito abatement districts or other trained personnel responsible for insect control programs. Wear suitable protective equipment and clothing when using or handling chlorpyrifos to help avoid exposure to eyes and skin. As a minimum, chemical worker's goggles, neoprene or natural rubber gloves and footwear, a long-sleeved shirt and long-legged pants or coveralls are recommended. To avoid breathing spray mist during application in confined areas, wear a mask or respirator of a type recommended by National Institute of Occupational Safety and Health for filtering spray mists and organic vapors.

Bee Caution:
This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply chlorpyrifos or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

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*Dursban
O,O-diethyl O-(3,5,6-trichloro-2-pyridyl) phosphorothioate

GENERAL WARNINGS AND LIMITATIONS (continued)

Agricultural Crop Tolerances:
Alfalfa, green forage - 4 ppm
Alfalfa, hay - 15 ppm
Chinese Cabbage - 2 ppm
Citrus, pulp, dried (intended for animal feed) - 15 ppm
Mint, hay - 1 ppm
Mint, oil - 10 ppm
Onions, dry bulb - 0.5 ppm
Pepper - 1 ppm
Strawberry - 0.5 ppm
Tomatoes - 0.5 ppm
Turnips, green -1 ppm
Turnips, roots - 3 ppm
Wheat, milling fractions, except flour - 3 ppm
Wheat - 1 ppm (temporary tolerance)
Wheat, straw - 3 ppm (temporary tolerance)
Livestock and Poultry Tolerances:
Eggs - 0.1 ppm
Goats (fat, meat, meat byproducts) - 1 ppm
Hogs (fat, meat, meat byproducts) - 0.5 ppm
Milk, fat [0.02 ppm (N) in whole milk] - 0.5 ppm
Poultry (fat, meat, meat byproducts) - 0.5 ppm
Sheep (fat, meat, meat byproducts) - 1 ppm
Refer to the Code of Federal Regulations [CFR 21, Parts 170-199, (Revised as of April 1, 1980)] for food additive tolerance of chloryprifos.
Definition of Terms:
*Tablespoons actual. A hypothetical quantity computed by multiplying the number (or equivalent number) of tablespoons of product by the concentration of chlorpyrifos in the fomulation.
**Computed from tablespoon/teaspoon dosage.
***Exact computation of actual dosage is not possible because of the lack of weight/volume information on the label. Extrapolation from other formulations reveals that the dosage from this label appears to fall within the range shown by formulations with known weight/volume ratios.
Claims for pest control limited to suppression of population are indicated by parenthesized pest name.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Broccoli cluster (continued)		
		0.8-1.65 oz/ 1,000 ft row (4 lb/gal EC)	Soil application at planting (band). For direct seeded crops, apply a 2 to 4 inch band over the row either ahead of the planter shoe or in front of the press wheel to achieve shallow incorporation. Apply in a minimum of 20 gallons of water per acre. Transplant water application. Apply as soil drench to transplants immediately after setting. Apply in a minimum of 20 gallons of total drench per acre. Apply to soil at the base of the plants.
	Brussels Sprouts	See Broccoli cluster.	
	Cabbage	See Broccoli cluster.	
	Cauliflower	See Broccoli cluster.	
/28005AA	Corn		0.1 ppm field, grain, fresh (including sweet kernels and cob with husks removed), fodder, forage Foliar application (postemergence) through 1.5 pounds per acre. Broadcast soil application (preplant) through 2 pounds per acre. Banded soil application (at planting) through 2.4 ounces per 1,000 feet of row. Banded soil application (postemergence through 1.2 ounces per 1,000 feet of row. For row treatments, amount applied per acre varies according to row spacing. Do not make more than 1 application during the growing season. 50 day pregrazing or preharvest interval for forage, fodder, silage, or grain, to be fed to dairy or meat animals. Control of soil insects may be reduced in soils containing over 10 percent organic matter or soils under very dry conditions. Consult

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Corn (continued)		
			your State Agricultural Extention Service for information concerning soil insect control.
ITBCCFA	Armyworm	0.5-1 lb/A (4 lb/gal EC)	Foliar application. May be applied by aircraft in a minimum of 2 gallons of water per acre. Apply when field counts indicate. For cutworms, apply when soil is moist and pest active or near soil surface. If soil is dry, cloddy, or crusty at time of application cutworms may be protected from the spray and effectiveness reduced. If this condition exists, cultivation by rotary hoe or equivalent equipment before or soon after application may improve control.
INASDUA ITBCABA ITBMBOA	Billbugs Cutworms Lesser cornstalk borer	1-1.5 lb/a (4 lb/gal EC)	
IVABAAA	Grasshoppers	0.25-0.5 lb/A (4 lb/gal EC)	
INASDUA INAMADA INBPAAA INAVAAA	Billbugs Flea beetles (larvae) White grubs Wireworms	2 lb/A (15% G)	Preplant soil application (broadcast). Incorporate the granules into the top 4 to 6 inches of soil.
ITBCABA	Cutworms	1-2 lb/A (15% G)	
INASDUA ITBMBOA	Billbugs Lesser cornstalk borer	1.2-2.4 oz/ 1,000 ft row (15% G)	Soil application at planting (band). Apply in a 6 to 7 inch band over the row between the planter shoe and press wheel. Incorporate granules into the top 1 inch of soil. If cutworm damage continues as a result of dry soil conditions, a rescue treatment may be needed to control surviving cutworms.
ITBCABA	Cutworms	1.2 oz/1,000 ft row (15% G)	
INAMBLC INAMBMC INAMBOC	Northern corn rootworm (larvae) Southern corn rootworm (larvae) Western corn rootworm (larvae)	0.9-1.2 oz/ 1,000 ft row (10-15% G)	
IJDAAAA	Symphylans	1.2-1.8 oz/ 1,000 ft row (15% G)	

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Corn (continued)		
	Pest list continued from previous page.		
INAVAAA	Wireworms	2.4 oz/1,000 ft row (15% G)	
INAKABA INBPAAA	Seedcorn beetle White grubs	1.2-2.4 oz/ 1,000 ft row (15% G)	Soil application at planting (band). Apply granules in the furrow with the seed either through or directly behind the planter shoe.
IOACAHA INAVAAA	Seedcorn maggot (Wireworms)	1.2 oz/1,000 ft row (15% G)	
INAVAAA	Wireworms	2.4 oz/ 1,000 ft row (15% G)	
[illegible]MBHA I[illegible]BCABA INAVAAA	Corn rootworms Cutworms Wireworms	1-2 lb/A (4 lb/gal EC)	Preplant soil application (broadcast). Apply in a minimum of 10 gallons of water per acre. Incorporate into the top 2 to 4 inches of soil using disk or cultivator.
INAMBLC INAMBMC INAMBOC	Northern corn rootworm (larvae) Southern corn rootworm (larvae) Western corn rootworm (larvae)	0.9-1.2 oz/ 1,000 ft row (15% G)	Postplant soil application (band). Apply during cultivation. Apply granules over the row or sidedress both sides of the row. Cultivate into the soil.
IOACAHA	Seedcorn maggot	2 oz/100 lb seed (25% D)	Planter box seed treatment. Do not mix with bare hands. Do not use treated seed for human consumption, as feed for livestock or poultry, or for oil purposes.

Refer to Beans for additional information.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28007AA	Cotton		0.5 ppm (cottonseed) 14 day preharvest interval through 1 pound per acre for foliar application. Do not allow livestock to graze in treated areas. Do not feed gin trash or treated forage to livestock. May be applied by aircraft in a minimum of 1 gallon of water per acre. Fly at a height of 5 to 15 feet. Orientate position of nozzles to produce a droplet size of 100 to 200 microns. For ground equipment use flat fan or disc core hollow cone nozzles spaced a maximum of 20 inches apart on the boom. Maintain spray pressure at 40 to 60 pounds per square inch and droplet size of 100 to 200 microns. Unless otherwise specified apply when field counts indicate and repeat as needed.
ITBCCFA	Armyworm	0.5-1 lb/A (4 lb/gal EC)	Use limited to AZ and CA. Foliar application. For bollworms, scout 2 times per 7 day intervals and treat when instars are less than 0.25 inch in length. For spider mites, when large numbers of eggs are present, make a second application 3 to 5 days later to control newly hatched nymphs.
IRACAOA	Cotton aphid		
IQAMAYA	Cotton fleahopper		
IQAMARA	Lygus bugs		
ITABACA	Saltmarsh caterpillar		
IMOAAAA	Thrips		
INASAHA	Boll weevil	1 lb/A (4 lb/gal EC)	
ITBCBOA	Bollworm (*Heliothis* spp.)		
ITAYAHA	(Cotton leafperforator)		
ITBCABA	Cutworms		
ITAMADA	Pink bollworm		
ILAVAAA	(Spider mites)		
ITBCCFA	Armyworm	0.25-0.5 lb/A (4 lb/gal EC)	Foliar application. Tank mix with O-ethyl O-[4-(methylthio phenyl] S-propyl phosphorodithioate.
INASAHA	Boll weevil		
ITBCBOA	Bollworm (*Heliothis* spp.)		
IQAMAYA	Cotton fleahopper	0.5 lb/A (4 lb/gal EC)	Foliar application. Tank mix with emulsifiable formulations of O,O-dimethyl O-p-nitrophenyl phosphorothioate and toxaphene or emulsifiable formulations of O,O-dimethyl O-p-nitrophenyl phosphorothioate and O-ethyl O-(p-nitrophenyl) phenylphosphonothioate.
IQAMAAA	Plant bugs (including lygus and mirids)		
ILAVAAA	Spider mites		

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Cotton (continued)		
		0.5-1 lb/A (4 lb/gal EC)	Foliar application. Tank mix with cyano (3-phenoxyphenyl)methyl 4-chloro-alpha-(1-methylethyl)benzeneacetate.
ITBCCNA INASAHA ITBCBOA ITBCABA ITAMADA ITABACA	Beet armyworm Boll weevil Bollworm (*Heliothis* spp.) Cutworms Pink bollworm Saltmarsh caterpillar	0.75-1 lb/A (4 lb/gal EC)	Use limited to states other than AZ and CA. Foliar application. For bollworms, scout 2 times per 7 days intervals and treat when instars are less than 0.25 inch in length. For spider mites, when large number of eggs are present, make a second application 3 to 5 days later to control newly hatched nymphs.
IRACAOA ITBCCOA ILAVAAA AAAA CCQA	Cotton aphid Fall armyworm Spider mites Thrips Yellowstriped armyworm	0.25-0.5 lb/A (4 lb/gal EC)	
IQAMAYA IQAMAAA	Cotton fleahopper Plant bugs (including lygus and mirids)	0.188-0.5 lb/A (4 lb/gal EC)	Use limited to states other than AZ and CA. Foliar application. The low dosage will not achieve the high degree of control as the higher rate but will minimize the damage done by plant bugs and cotton fleahopper plus allow beneficial insects to survive, build up, and be available to aid in the control of bollworms.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/10010AA /08015AA /15011AA /15015AA /28075AA /10011AA /28023AA	Cucumber Dill Lentils Okra Peas Pumpkins		0.1 ppm (vegetable seed) Seed treatment through 1 ounce per 100 pounds of seed. Do not mix the seeds and chlorpyrifos with bare hands. Do not use treated seed for human consumption, as feed for livestock or poultry, or for oil purposes.
INACABA IOACAHA	Seedcorn beetle Seedcorn maggot	1 oz/100 lb seed (50% WP)	Slurry treatment of seeds prior to planting. Disperse in a water solution containing 0.5 percent (by weight) of any acceptable sticking agent. Use 12 to 15 fluid ounces of solution for each 100 pounds of seed. Mix the slurry with the seed using a rotating blender or other mixing equipment that will ensure each seed is uniformly coated. Dry the seed immediately after treatment. Treated seeds may be stored for up to 14 months without loss of insecticidal effectiveness. May be tank mixed with chloroneb, thiram, or captan.
	Dill	See Cucumber cluster.	
	Lentils	See Cucumber cluster.	
/05003AA	Nectarines		0.05 ppm 14 day preharvest interval through 3 pounds per 100 gallons for bark application. Do not make more than 1 application during the growing season. Do not allow meat or dairy animals to graze in treated orchards.
ITBCABA ITAMABA IRAKBYA	Cutworms Peach twig borer San Jose scale	0.25-0.5 lb/ 100 gal/A (4 lb/gal EC)	Dormant or delayed dormant application. Apply to the entire tree to the point of runoff. Use the higher rate for severe infestation. Tank mix with oil.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Nectarines (continued)		
ITBQAHA	Peachtree borer	3 lb/100 gal (4 lb/gal EC)	Bark application. Apply before newly hatched larvae enter the trees. Apply as a coarse, low pressure spray to give uniform coverage of tree trunks. Thoroughly wet all bark areas from scaffold branches to ground. Do not allow spray to contact fruit. Consult your State Agricultural Extension Service for proper timing of application in your area.
	Okra	See Cucumber cluster.	
/05004AA	Peach		0.05 ppm 14 day preharvest interval through 3 pounds per 100 gallons for bark application. Do not make more than 1 application during the growing season. Do not allow meat or dairy animals to graze in treated orchards.
ITBCABA ITAMABA IRAKBYA	Cutworms Peach twig borer San Jose scale	0.25-0.5 lb/100 gal/A (4 lb/gal EC)	Dormant or delayed dormant application. Apply to the entire tree to the point of runoff. Use the higher rate for severe infestation. Tank mix with oil.
ITBQAHA	Peachtree borer	3 lb/100 gal or 0.5 oz/gal [0.25-8 gal/tree] (0.5-4 lb/gal EC)	Bark application. Apply before newly hatched larve enter the trees. Apply as a coarse, low pressure spray to give uniform coverage of tree trunks. Thoroughly wet all bark areas from scaffold branches to ground. Do not allow spray to contact fruit. Consult your State Agricultural Extension Service for proper timing of application in your area.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28015AA	**Peanuts**		0.5 ppm (peanuts) 15 ppm (peanut hulls) 21 day preharvest interval through 2 pounds per acre for foliar application. Do not exceed 4 pounds per acre per growing season for foliar application (broadcast or directed spray). Do not make more than 1 application per growing season as a directed spray. Banded soil application (prior to or at pegging) through 2.25 ounces per 1,000 feet of row. Do not make more than 1 application during season for banded soil application. For row treatments, amount applied per acre varies according to row spacing. Do not feed treated peanut forage or hay to meat or dairy animals. For emulsifiable concentrate formulation, apply in sufficient water for thorough coverage.
ITBCCFA ITBCBOA ITBCABA ILAAABA	Armyworm Corn earworm Cutworms Mites	0.5-1 lb/A (4 lb/gal EC)	Foliar application (broadcast). May be applied by aircraft. Apply when field counts indicate damaging pest populations are developing or present.
ITBMBOA	Lesser cornstalk borer	1-2 lb/A (4 lb/gal EC)	Foliar application as a directed spray (band). Apply in a 8 to 10 inch band to the base of the plants.
		1.125-2.25 oz /1,000 ft row (15% G)	Prepegging soil application (band) to irrigated peanuts. Apply in a 10 to 18 inch band over the fruiting zone just prior to pegging. Incorporate into the top 1 to 2 inches of soil, plant size permitting. Irrigate within 24 hours after treatment using a minimum of 2 acre inches of water.
INAMBMA	Southern corn rootworm	1.125-2.25 oz /1,000 ft row (15% G)	Soil application at or just prior to pegging (band). Apply in a 10 to 18 inch band over the fruiting zone. Incorporate granules into the top 1 to 2 inches of soil with a cultivator.

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/04003AA	Pear		0.05 ppm Dormant or delayed dormant application through 0.5 pounds per acre. Do not make more than 1 application during the dormant or delayed dormant periods. Do not allow meat or dairy animals to graze in treated orchards.
ITBCABA IRAKBYA	Cutworms San Jose scale	0.25-0.5 lb/ 100 gal/A (4 lb/gal EC)	Dormant or delayed dormant application. Apply to the entire tree to the point of runoff. Use the higher rate for severe infestation. Tank mix with oil.
	Peas	See Cucumber cluster.	
/05005AA /05006AA	Plum Prune		0.05 ppm (fresh prunes) Dormant or delayed dormant application through 0.5 pounds per acre. Do not make more than 1 application during dormant or delayed dormant periods. Do not allow meat or dairy animals to graze in treated orchards.
ITBCABA IRACCAA IRAKBYA	Cutworms Mealy plum aphids San Jose scale	0.25-0.5 lb/ 100 gal/A (4 lb/gal EC)	Dormant or delayed dormant application. Apply to the entire tree to the point of runoff. Use the higher rate for severe infestation. Tank mix with oil.
	Prune	See Plum cluster.	
	Pumpkin	See Cucumber cluster.	
/14014AA	Radish		3 ppm Banded soil application (at planting time) through 0.5 ounce per 1,000 feet of row not to exceed 2.75 pounds per acre. Do not make more than 1 application during the growing season.
IOACABA	Root maggots	0.5 oz/1,000 ft row (15% G)	Soil application at planting (band). Apply in the seed furrow.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Radish (continued)		
		0.5 oz/1,000 ft row (4 lb/gal EC)	Soil application at planting (band). Apply as a drench to the seed furrow. Apply in a minimum of 20 gallons of drench per acre.
/14015AA	Rutabagas		3 ppm Banded soil application (at planting time) through 1.65 ounces per 1,000 feet of row not to exceed 2.25 pounds per acre. Do not make more than 1 application during the growing season. Do not use the tops for food or feed purposes.
IOACABA	Root maggots	0.81-1.61 oz/ 1,000 ft row (15% G)	Soil application at planting (band). Apply over the row in a 2 to 4 inch band ahead of the planter shoe or in front of the press wheel to achieve shallow incorporation.
		0.8-1.65 oz/ 1,000 ft row (4 lb/gal EC)	Soil application at planting (band). Apply as a spray in a 2 to 4 inch band over the row ahead of the planter shoe or in front of the press wheel to achieve shallow incorporation. Apply in a minimum of 20 gallons spray per acre.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28019AA	Sorghum (grain)		0.75 ppm (sorghum grain) 1.5 ppm (sorghum, milling fractions) 1.5 ppm (sorghum, forage) 6 ppm (sorghum, fodder) 14 day pregrazing or preharvest interval for forage, hay, or silage through 0.25 pound per acre for foliar application. Apply in sufficient water for thorough coverage. Do not treat sweet varieties of sorghum.
IOAHAIA	Sorghum midge	0.25 lb/A (4 lb/gal EC)	Foliar application. May be applied by aircraft. Make the first application when 30 to 50 percent of the seed heads are in bloom and midge adults are present. A second and third treatment at 3 day intervals may be needed, but do not exceed 3 applications. To avoid phytotoxicity, do not treat plants that are under extreme heat and drought stress.
/28023AA	Soybeans		0.1 ppm (vegetable seed) 1 ppm (soybeans) 8 ppm (soybean forage) 15 ppm (soybean straw) Seed treatment through 1 ounce per 100 pounds of seed. Do not mix the seeds and chlorpyrophos with bare hands. Do not use treated seed for human consumption, as feed for livestock or poultry, or for oil purposes.

Refer to Cucumber cluster.

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28020AA	Sugar Beets		0.05 ppm (sugar beet tops) 0.2 ppm (sugar beet roots) 1 ppm (sugar beet pulp, dried) 3 ppm (sugar beet molasses) Banded soil application (at planting time or postemergent up to the 2 to 4 true leaf stage) through 1.35 ounces per 1,000 feet of row. Do not make more than 1 application per year.
ITBCABA IOAXACC	Cutworms Sugarbeet root maggot (larvae)	0.975-1.35 oz /1,000 ft row or 1.5-2 lb/A [22 inch row] (15% G)	Soil application at planting (band). Apply in a 5 to 7 inch band over the drill row. Apply ahead of the planter shoe as the seed is drilled in the center of the band or apply behind the planter over the drilled row. Incorporate the granules into the top 1 to 2 inches of soil. Postemergent soil application (band) up to 2 to 4 true leaf stage. Apply a 5 to 7 inch band over the plants and incorporate the granules into the top 0.5 to 1 inch of soil using cultivators.
/14018AA	Sweet Potato		0.1 ppm Broadcast soil application (preplant) through 2 pounds per acre. Do not make more than 1 application during the growing season.
INAVAWA INAMDOA INAMDXA	*Conoderus* wireworms Sweetpotato beetle *Systena* flea beetles	2 lb/A (15% G) (4 lb/gal EC)	Preplant soil application (broadcast). Incorporate into the top 4 to 6 inches of soil using disk cultivators.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	LIVESTOCK AND POULTRY		
	(Livestock Intended for Slaughter)		
/53001IA	Beef Cattle		2 ppm (cattle fat) 2 ppm (cattle meat) 2 ppm (cattle meat byproducts) 14 day preslaughter interval through 1 fluid ounce of 23.7 percent emulsifiable concentrate formulation per 8 gallons of water for animal spray treatment or 0.5 gallon of 23.7 percent emulsifiable concentrate formulation per 300 to 500 gallons of water for animal dip treatment or 2 cubic centimeters of 3.8 pound per gallon of liquid - ready to use formulation for animal treatment. Limit treatment to 6 applications at 21 day intervals per season for spray and dip treatments.
ILAM\WA	Boophilus ticks	1 fl.oz 23.7% EC/8 gal [0.75-1 gal/ animal] (23.7% EC)	Use limited to qualified state or federal personnel responsible for quarantine programs to control fever ticks. Animal spray treatment. Treat thoroughly and saturate the hair. Spray at 200 to 400 pounds per square inch to assure good penetration.
		0.5 gal 23.7% EC/300-500 gal (23.7% EC)	Use limited to qualified state or federal personnel responsible for quarantine programs to control fever ticks. Animal dip treatment. To prepare for dip treatment, clean vat thoroughly before filling with water. Measure water into vat, or measure the vat before filling and calculate the number of gallons of water needed to fill it. Record the various levels. After filling the vat with water, add the lower concentrated dosage (per 500 gallons of water). Agitate the dip solution thoroughly prior to each use to assure uniform treatment. To replenish, use the higher concentrated dosage (per 300 gallons of water). Between dipping,

Beef Cattle (continued)

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
			if a loss of liquid is recorded by evaporation, add water only to raise to previous level. If flooding has occurred between dippings, use the higher concentrated dosage (per 300 gallons of water) for the excess water that has run into the vat. Maintain the dip solution as clean as possible by cleaning the race and draining the pens regularly. Immediately prior to each dipping operation, agitate the dip solution thoroughly, paying particular attention to the jump-in end. Use adequate mixing equipment. Be sure free access to drinking water is available to animals prior to dip treatment. Care should be taken when dipping young calves to prevent injury or drowning.
IMBHAAA IOAUADA IMBAAAA	Chewing lice Horn fly Sucking lice	2 cc 3.8 lb/gal RTU/100 lb animal body weight (3.8 lb/gal RTU)	Animal treatment. Wearing rubber gloves in a well ventilated area, apply in one spot to the midline area of the animal, just behind the shoulder blades and neck junction. Use the dosage for animals weighing up to 800 pounds. For cattle weighing more than 800 pounds, use no more than 16 cubic centimeters. Due to the small amount of material required, care must be taken to apply the proper dosage. Do not treat bulls over 8 months of age of any breed; purebred continental or exotic breeds such as Simmental, Chianina, Charolais, or Gelbvieh; dairy-breed cattle of any age; cows within 21 days prior to or 14 days after calving; veal calves; or beef breed calves under 12 weeks of age. Dairy, Brahma, continental or exotic breed cattle crossed with beef breeds (British) may be treated. Do not treat cattle for 10 days before or after shipping, dehorning, castration, or vaccination. Do not brand animals with a hot iron while

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
Commercial, Institutional, and Industrial Areas (Indoor, Inedible)		
cluster (continued)		
	0.293 oz/ 1,000 sq.ft (0.073 lb/ gal RTU) or 0.583 oz/ 1,000 sq.ft (0.146 lb/ gal RTU)	Indoor treatment. Before treating kitchen areas, remove all food, utensils, and other containers from cabinets or other storage areas. With a 3 to 4 inch applicator (brush, roller, or hand sponge), paint bands completely around the undersides of all shelving, never on the shelves where food may contact the treated surface. Remove all cabinet and vanity drawers and band 3 exterior sides of each. Do not apply to drawer interior or to front panel. Paint a band completely around the undersides of the counter top and side panels of cabinets. Pay special attention to treating under and around the sink. Band cabinet exteriors where they join the wall or at point of cracks and crevices. Paint a band around the cabinet base and baseboards of the entire home or facility, the flat surface around each door casing, and under shelving in closets and storage areas. Treat bathroom vanities in the same manner as kitchen cabinets. Interior window casings may be treated. Where quick knockdown and/or flushing action is desired, a pyrethrin spray may be used in hard to reach areas. May be applied as a coarse, low pressure spray (20 pounds per square inch) in 6 to 8 inch bands in attics and spider nesting areas of interior metal or wood framing of buildings. Avoid spraying to the point of runoff.

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Commercial, Institutional, and Industrial Areas (Indoor, Inedible) cluster (continued)		
ASAAA AAABA AAAAA AAABA AMAAA AAAAA AAACA	Ants Cockroaches Flies Mites Mosquitoes Spiders Ticks	3.28 gal 0.86% RTU/ 1,000 sq.ft (0.86% RTU)	Indoor treatment. Apply as a final coat of paint to walls, floors, and ceilings with brush or roller. May also be sprayed. Allow to dry for 20 days before washing. The painted surface should be washed with clear water anytime that it becomes covered with dust or dirt in order to reestablish maximum possible contact between the treated surface and pests.
		-- (0.073-0.146 lb/gal RTU)	Indoor treatment. Apply a coarse, low pressure (20 pounds per square inch or less) spray in 6 to 8 inch bands. Avoid spraying to the point of runoff. Box cars, ship holds, and warehouses should be banded at the wall/floor joints and on floors along aisles and around pallets and other designated storage areas. Test treat surfaces prior to treatment.

CHLORPYRIFOS

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations

COMMERCIAL ESTABLISHMENTS

General Warnings and Limitations: Do not use chlorpyrifos in combination with 2,2-dichlorovinyl dimethyl phosphate or pyrethrins for treatment of food areas of food handling establishments. Use only deodorized kerosene for oil based sprays in areas of food handling establishments.

(Commercial Establishments (edible product areas))

0000JB	Commercial Transportation Facilities (Indoor, Edible)
2000JB	Eating Establishments (Indoor, Edible)
3000JB	Food Handling Establishments (Indoor, Edible)
1000JB	Food Processing, Handling and Storage Plants/Areas (Indoor, Edible)

ASAAA	Ants	-- (0.5% PrL)	Indoor treatment. Apply with injection tube into cracks and crevices where pests may be present. Place injector tip 0.5 inch into areas to be treated, releasing approximately 1 second spray per spot. For light infestations or as preventive treatment apply at 3 foot intervals, for heavy infestations apply at 1 foot intervals if possible. For carpenter ants and carpenter bee, locate source of infestation and inject 5 to 10 seconds spray into tunnels and cavities of pests. For carpenter bee, seal entrance openings with small pieces of stainless steel wool after application. Whenever possible, spray directly on pests and repeat as needed.
[illegible]CA	Booklouse		
[illegible]A	Branbugs		
[illegible]CA	Boxelder bug		
ASAFA	Carpenter ants		
BKABA	Carpenter bee		
AVABA	Clover mite		
AGAHA	Cluster fly		
AAABA	Cockroaches		
AHAAA	Crickets		
ABAEA	Drugstore beetle		
DAAAA	Earwigs		
AMDAA	Elm leaf beetle		
ASEKA	Grain weevils		
CAAAA	Millipedes		
PBACA	Silverfish		
FAAEA	Sowbugs		
AAAAA	Spiders		
AAACA	Ticks		
BMBEA	Tobacco moth		

Commercial Transportation Facilities (Indoor, Edible) cluster (continued)

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
SASAAA LAVABA AAABA AHAAA PBABA PBACA AAAAA AAAFA	Ants Clover mite Cockroaches Crickets Firebrat Silverfish Spiders Stored product insects (including branbugs, cigarette beetle, confused flour beetle, Indianmeal moth, Mediterranean flour moth, red flour beetle, rice weevil, sawtoothed grain beetle)	0.25-0.5% emulsion (0.33-4 lb/gal EC) (14.45-41.2% EC) (0.073-0.146 lb/gal RTU) or -- (0.5% RTU) (0.5% PrL)	Spot and/or crack and crevice treatment. Spot treatment may encompass crack and crevice treatment. Dilute emulsifiable concentrate formulation with water or deodorized kerosene. For ants, apply to ant trails and wherever these pests may find entrance. Repeat as needed but not more than once every 7 days in restaurants and similar food service establishments or more often than once every 14 days in other types of food handling establishments. In case of emergency, chlorpyrifos may be applied after 2 days from last treatment but emergency use should be limited to once per month.
AAABA	Cockroaches (including American cockroach and German cockroach)	bait [4-6 baits/100 sq.ft] (0.5% Impr)	Indoor treatment. Apply bait in teaspoon amounts in a suitable bait station or on paper, foil, paperboard, or other material that will permit removal. Locate stations where pests have been observed. Replacement of baits should be made at 28 to 42 day intervals as needed. If German cockroach is the main target species, place bait stations at more frequent intervals in areas where pest has been observed. When applying bait where food is prepared, processed, or served, maintain strict account of location and number of bait stations. Do not apply bait until operations have ceased for the day. Remove bait stations before operations resume.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Beef Cattle (continued)		
			treating. The solvent system is combustible and could cause a serious burn to the animals. If reinfestation occurs, animals may be retreated according to the following schedule: (1) 45 days after initial treatment with a 14 day withdrawal prior to slaughter. (2) 30 days after initial treatment with a 21 day withdrawal prior to slaughter. Do not retreat animals within less than 30 days. Label claims cattle may be treated during any season of the year and provides for control of horn fly for up to 6 weeks.
	AGRICULTURAL PREMISES AND EQUIPMENT		
	(Poultry Houses, Equipment and Yards)		
/55008JA	Turkey Pen		0.5 ppm (turkey fat) 0.5 ppm (turkey meat) 0.5 ppm (turkey meat byproducts) 7 day preslaughter interval through 4 pounds per acre for premise soil treatment.
ILAWAAA	Chigger mites	4 lb/100-150 gal/A (25% WP)	Premise soil treatment. To prevent turkeys from becoming infested, apply just before turkeys are transferred to pens. For turkeys already infested, spray the soil in pens thoroughly. Allow a minimum of 21 days for chigger mite lesions on the turkey to heal before slaughtering. Spray a 10 to 15 feet protected area around the periphery of the treated pens. Do not spray directly on turkeys. Limit treatments to 2 soil applications at intervals of not less than 28 days. Avoid getting the spray on feed or in waters. Open feed should be covered during spraying operations and water troughs should be flushed out im-

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Turkey Pen (continued)		
			mediately after the spraying operations.
	(Animal Buildings, Equipment and Outdoor Areas For Other Than Dairy, Poultry and Pets)		
/56005JA	Horse Stables		1 ppm (horse, fat) 1 ppm (horse, meat) 1 ppm (horse, meat byproducts) Premise treatment only. Do not apply directly on horses. Do not contaminate horse food or feed items
ISASAAA	Ants	0.5% solution [1 gal 0.5% solution/ 1500 linear feet] (0.5% RTU)	Premise treatment. Spot application. When possible, spray directly on pests to reduce infestation. Apply as a coarse spray or with a paint brush into hiding places. Apply spray until area is wet, but not to the point of runoff. Repeat as needed. For repeat applications, dilute with equal parts of water. For ant control, spray trails, nests and points of entry. Spray directly on ants where possible. For flea and tick control, apply thoroughly as a spot treatment to infested areas such as horse beds and resting quarters where pests may be present.
IJBAAAA	Centipedes		
ILAVABA	Clover mite		
IVAAABA	Cockroaches		
IVAHAAA	Crickets		
IMDAAAA	Earwigs		
IMNAAAA	Fleas		
IJCAAAA	Millipedes		
IMPBACA	Silverfish		
IIFAAEA	Sowbugs		
IKAAAAA	Spiders		
ILAAACA	Ticks (including brown dog tick and lone star tick)		
	(Farm Storage and Equipment (nonanimal))		
/61000JA	Farm Buildings		
ISASAAA	Ants	3.28 gal 0.86% RTU/ 1,000 sq.ft (0.86% RTU)	Premise treatment. Apply as a final coat of paint to walls, floors and ceilings with brush or roller. May also be sprayed. Allow to dry for 20 days before washing. The painted surface should be washed with clear water any time that it becomes covered with dust or dirt in order to reestablish maximum possible contact between the treated surface and pests.
IVAABA	Cockroaches		
IOAAAAA	Flies		
ILAAABA	Mites		
IOAMAAA	Mosquitoes		
IKAAAAA	Spiders		
ILAAACA	Ticks		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	(Empty Mushroom Houses and Greenhouses, Uncropped Mushroom House and Greenhouse Soils)		
/610060A	Greenhouse Bench Nursery Bench		
ISASBDA	Imported fire ants	0.4 oz/cu.yd of media (5% G)	Soil aplication. Use equipment suitable to give uniform distribution of granules. Do not use plants for food or feed purposes which have been exposed to soil treated with this formulation.
	(Uncultivated and/or Uncropped Agricultural Areas (outdoor))		
/40000AA	Potting Media Potting Soil		
ISASBDA	Imported fire ants	0.4 oz/cu.yd of media (5% G)	Soil aplication. Use equipment suitable to give uniform distribution of granules. Do not use plants for food or feed purposes which have been exposed to soil treated with this formulation.
	HUMAN, PETS, AND OTHER ANIMALS		
/54007JA /54003JA	Dog Kennels Pet Bedding Pet Quarters		Old bedding of pets should be removed and replaced with clean, fresh bedding after treatment.
ISASAAA ILAMAQA IMNAAAA	Ants Brown dog tick Fleas	0.4 oz/1,000 sq.ft (0.5% G)	Premise treatment. Spot application. For resting quarters, apply to nearby cracks and crevices, along and behind baseboards, window and door frames and localized areas of floor and floor covering where pests may be present. Do not treat pets with this formulation.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Dog Kennels cluster (continued)		
ISASAAA	Ants	0.5% emulsion [1 gal 0.5% solution/ 1500 linear feet] (0.5% RTU)	Premise treatment. Spot application. When possible, spray directly on pests to reduce infestation. Apply as a coarse spray or with a paint brush to areas where pests are normally found. Apply spray until area is wet, but not to the point of runoff. Repeat as needed. For repeat applications, dilute with equal parts of water. For ants, apply to trails, nests and points of entry. Spray directly on ants where possible. For flea and tick control, thoroughly apply as a spot treatment to infested areas such as bedding and sleeping area where pests may be present. Do not treat pets with this formulation. Do not contaminate dog food and dog food items.
IJBAAAA	Centipedes		
ILAVABA	Clover mite		
IVAAABA	Cockroaches		
IVAHAAA	Crickets		
IMDAAAA	Earwigs		
IMNAAAA	Fleas		
IJCAAAA	Millipedes		
IMPBACA	Silverfish		
IIFAAEA	Sowbugs		
IKAAAAA	Spiders		
ILAAACA	Ticks (including brown dog tick and lone star tick)		
ILAMAQA	Brown dog tick	16 fl.oz 20% EC/5 gal (20% EC)	Use limited to professional pest control operators. Premise treatment. Remove pets, food and water utensils before spraying. Thoroughly spray all surfaces, cracks and crevices where pests may hide or crawl. Allow treated areas to dry before using kennels.
IVAAABA	Cockroaches		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/54003IA	**Dogs**		
IMNAAAA	Fleas	pump spray (0.09-0.22% PrL)	Animal treatment. Place dog on a table or bench preferably outdoors. Hold can in an upright position 3 to 6 inches from the dog and thoroughly spray all over the body against the lay of the coat. Do not spray on eyes or on scrotum. Spray to leave the coat slightly damp down to the skin level. Spraying time should be between 30 to 60 seconds on a medium sized dog. Label claims 1 treatment will protect against reinfestation for up to 30 days. Repeat as needed. Spray bedding and sleeping area. Do not use on dogs nursing puppies or on pups under 10 weeks old.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations

ORNAMENTALS

General Warnings and Limitations: Keep children and pets off treated areas until spray has dried for spray formulations. Keep out of lawn and garden fishponds and other bodies of water. Mosquitoes coming to rest on areas treated for control of turf and ornamental plant pests will be killed for varying periods of time after treatment, depending on exposure of treated areas to weathering conditions. Outdoor application of formulations greater than 10 percent active ingredient is limited to professional pest control operators.

(Ornamental Plants (herbaceous, woody shrubs, trees and vines))

General Warnings and Limitations: Do not apply to azalea, camellia, poinsettia, rose, or variegated ivy as injury may occur. Apply with suitable hand or power spray equipment. Apply to both upper and lower leaf surfaces and infested limb and trunk areas. Attempt to penetrate dense foliage but avoid spraying to the point of excessive runoff. Apply when pest first appears and repeat at 7 to 10 day intervals, if needed.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/35133AA /35133DA	Cottonwood (including nursery stock)		
INAMAZA	Cottonwood leaf beetle	0.125-0.1875 lb/A [8-20 gal/A] (4 lb/gal EC)	Foliar application. Apply to cottonwoods grown in nurseries and plantations when field counts indicate damaging beetle populations are developing or present.
/35049AA	Elm		
INBQBEA	Native elm bark beetle	0.5% emulsion (1-4 lb/gal EC)	Foliar and bark application. To prevent adult beetles from overwintering in uninfected trees and to reduce pest population in disease free areas, apply to bottom 9 feet of trunk. Wet thoroughly, but do not apply to the point of runoff. Care should be taken to apply the spray to the base of the root flare. Apply with back pack mist blower or a hydraulic pressure sprayer from spring through to early fall. To reduce twig and branch feeding on uninfected, high value trees; apply to crown of tree in spring or early summer using a sprayer that will provide thorough coverage.

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/35006AA	Ornamental Deciduous Trees		
/32005AA	Ornamental Evergreens		
/31000AA	Ornamental Herbaceous Plants		
/35000AA	Ornamental and/or Shade Trees		
/34004AA	Ornamental Woody Shrubs		
/34005AA	Ornamental Woody Vines		
IKACAAA	Aphids	0.04 oz**/gal (0.156 lb/gal EC) or 0.25 lb/100 gal or 0.04 oz/gal (0.33-4 lb/gal EC) (2.35-41.2% EC)***	Foliar application.
ITBKABA	Bagworm		
ITAUAEA	Eastern tent caterpillar		
ITABAIA	Fall webworm		
IVABAAA	Grasshoppers		
ILAAABA	Mites		
ITBNASA	Orangestriped oakworm		
IRAEAAA	Spittlebugs		
IRABAAA	Whiteflies		
ITBDADA	Yellownecked caterpillar		
ITBCABA	Cutworms	0.5 lb/100 gal or 0.08 oz/gal (0.33-4 lb/gal EC) (2.35-41.2% EC)***	Foliar application.
IRAFAAA	Leafhoppers		
IRAWAAA	Mealybugs		
ITAOACA	Mimosa webworm		
ITBDAIA	Redhumped caterpillar		
IMOAAAA	Thrips		
/35000AA	(Ornamental and/or Shade Trees)		
/34004AA	(Ornamental Woody Shrubs)		
ITBQAOA	Dogwood borer	1 lb/100 gal or 0.01 lb/gal (0.156-4 lb/gal EC) (6.6-22.4% EC)***	Bark application. Apply as a coarse, low pressure spray. For dogwood borer, apply to trunk and lower limbs of trees when the adults begin to emerge. Consult your State Agricultural Extension Service for proper timing of application in your area.
ITBQAEA	Lilac borer		
IRAHARG	Oak lecanium (crawlers)		
IRAKBRG	Pine needle scale (crawlers)		
ITBQANA	Rhododendron borer		
IRAKAZG	Tea scale (crawlers)		
IRAKBUG	White peach scale (crawlers)		

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/32000DA	Ornamental Plants (nursery stock)		
ISASBDA	Imported fire ants	0.01 lb/10 gal (0.156 lb/gal EC) or 0.125 lb/100 gal (2-4 lb/gal EC)	Dip treatment to nursery stock. For control of pest in soil attached to the roots of potted, containerized, balled, or burlapped nursery stock; completely submerge the ball of soil in a tank containing the emulsion. Do not remove burlap wrap or plastic containers with drain holes prior to submersion. Keep soil submerged until complete saturation has occurred, normally about 30 seconds. Wear rubber gloves, boots, and apron during operation.
/35098AA	Pine		
INBQAOA	Southern pine beetle	8.4 lb/100 gal or 0.084 lb/gal (2 lb/gal EC)	Bark application. For preventative treatment, apply to the main trunk of pines in the early spring or when threat of attack exists from nearby infested trees. Repeat as needed. For remedial treatment, apply to the main trunk of infested trees (or to infested logs) when damage occurs but before adults begin to emerge.
/35102AA	Prunus		
ITBQAHA	Peachtree borer	3 lb/100 gal or 0.03 lb/gal (0.156-4 lb/gal EC)	Bark application. Apply as a coarse, low pressure spray to trunk before newly hatched larvae enter the trees. Thoroughly wet all bark areas from ground level to scaffold limbs. Consult your State Agricultural Extension Service for proper timing of application in your area.

(Lawns and Turf (including ground covers))

General Warnings and Limitations: Keep children and pets off treated areas until the chlorpyrifos has been washed into the soil and the grass is dry for granular formulations. Do not graze treated areas. Do not apply within 7 days before or after seeding bluegrass. Apply granular formulations using any hand or power operated gravity or rotary type spreader. Labelling suggests that half the required dosage be applied in one direction, the remainder applied at a right angle. Immediately after application, thoroughly water to wash the chlorpyrifos into the turf using 130 to 150 gallons of water per 5,000 square feet. Do not mow for 24 hours following treatment. Apply emulsifiable concentrate formulations as a coarse (large droplet) spray using a low pressure sprayer such as a knapsack type, hose attached applicator, or other similar equipment. Lawn should be moist at time of application and mowed. Complete and uniform coverage of infested areas is necessary for effective control, do not spot treat. Thoroughly water after application to wash chlorpyrifos into the turf. For sod webworms, delay watering or mowing treated area for 12 to 24 hours after treatment. Apply when pest first appears and repeat as needed, unless otherwise specified. Do not apply to Dichondra.

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/33007AA /33010AA /33008AA /670020A	Golf Course Turf Lawns Ornamental Turf		
ISASAAA ITBCCFA INAS[illegible]A IQALAEA ILAVABA IVAHAAA ITBCABA IMDAAAA IOBNABC INAMADA IVABAAA IRAFAAA ITBMABA IIFAAEA IRAEAAA INASBYA	Ants Armyworm (including fall armyworm) Billbugs Chinch bug Clover mite Crickets (including field crickets and mole crickets) Cutworms Earwigs European crane fly (larvae) Flea beetles (including dichondra flea beetle) Grasshoppers Leafhoppers Sod webworms Sowbugs Spittlebugs Turf grass weevils	0.08-0.175 lb/5,000 sq.ft (0.075-2.5% G) or 0.118 lb/94.7-113.6 gal/5,000 sq.ft (0.156 lb/gal EC) or 0.09-0.117 lb/150 gal/5,000 sq.ft (0.33-4 lb/gal EC) (2.2-41.2% EC)***	Application to established lawns and turf. For chinch bug, apply when activity or damage appears (yellowing then browning of localized areas often developing into spots, then spreading through the lawn) usually mid-June for first brood and mid-August for second brood. Feeding continues until mid-October when temperatures cool. In northeastern states, apply in May or June when pest first appear. Repeat as needed, usually in July or August. Consult your State Agricultural Extension Service for proper timing of application in your area. As a preventative for chinch bug, apply as soon as daily temperatures reach 80 F (26.7 C) and repeat at 60 day intervals. For sod webworm, apply in late April or early May when pest first appears and repeat as needed, usually at 30 to 45 day intervals. Apply early or late in the day when pest is active. For European crane fly, consult your local State Agricultural Extension Service for proper timing of application in your area.
INASDYA	Bluegrass billbug	0.23-0.47 lb/5,000 sq.ft (4 lb/gal EC)	Application to established lawns and turf. Apply early in the season when pest first appears and repeat as needed.

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Golf Course Turf cluster (continued)		
INBPAGC INBPAZC	European chafer (larvae) Japanese beetle (larvae)	0.23-0.5 lb/ 5,000 sq.ft (0.3-2.5% G) or 0.23-0.47 lb/ 150 gal/ 5,000 sq.ft (0.33-4 lb/ gal EC) (5.3-41.2% EC)***	Application to established lawns and turf. Apply when larvae are young and actively feeding near the soil surface, usually during late July or August or when 2 to 4 larvae per square foot of soil are present. Consult your State Agricultural Extension Service for proper timing of application in your area.
ITASADC	Fiery skipper (larvae)	2.5 pt 5.3% EC/150 gal/ 5,000 sq.ft (5.3% EC)	Use limited to CA and HI. Application to established lawns and turf. Chinch bug erradication program will control this pest.
SBYA	*Hyperodes* weevils	0.23-0.25 lb/ 5,000 sq.ft (0.46-2.5% G) or 0.23-0.25 lb/ 150 gal/ 5,000 sq.ft (0.156-4 lb /gal EC) (2.35-41.2% EC)***	Application to established lawns and turf. Apply to suspected problem areas in mid-April and repeat in mid-May. Consult your State Agricultural Extension Service for proper timing of application in your area.
ITBMCZA	Tropical sod webworm	0.156 lb/ 5,000 sq.ft (4 lb/gal EC) or 2.5 pt 5.3% EC/150 gal/ 5,000 sq.ft (5.3% EC)	Use limited to HI. Application to established lawns and turf.

176

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	FOREST, CHAPARRAL, NONAGRICULTURAL AND WASTELANDS		
/670000A	Noncrop Areas (including Camp Sites, Paths, Picnic Areas, Recreational Areas, Roadsides, and Trails)		Prohibit public use during application and until spray has dried. Do not apply where runoff into streams, lakes or other bodies of water will occur.
/670000A	Uncultivated Nonagricultural Areas		
ILAWAAA ILAAACA	Chigger mites Ticks	0.4-0.464 oz/ 5,000 sq.ft [4.69-11.48 gal/5,000 sq.ft] or 0.22-0.25 lb/A [40-100 gal/A] (0.33-4 lb/ gal EC) (41.2% EC)***	Outdoor treatment. Apply where pests are a nuisance or are a possible public health problem. Treat low underbrush, grassy areas, weeds, ground surface, and debris.
IOAMAAJ	Mosquitoes (adults)	0.025-0.05 lb/A (0.33-4 lb/ gal EC) (41.2% EC)***	Outdoor treatment. Dilute with water or oil. Use the low dosage in light to medium vegetative cover. Use the high dosage in medium to heavy vegetative cover or for faster knockdown and longer residual control in open areas and those with light to medium vegetative cover.
		12 lb/98 gal solvent or maximum 0.03 lb/A (6 lb/gal SC/L)	Use limited to public health officials and trained personnel of mosquito abatement districts and other public mosquito control programs. Outdoor treatment. Thermal fog application. Dilute with number 2 fuel oil or other fuel, diesel or kerosene type oil suitable for insecticide and fogging use. Refer to label instructions for proper calibration of equipment.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Noncrop Areas cluster (continued)		
		0.005-0.01 lb/A (6 lb/gal SC/L)	Use limited to public health officials and trained personnel of mosquito abatement districts and other public mosquito control programs. Outdoor treatment. Ultra low volume nonthermal (cold fog) application. Apply by any standard ultra low volume ground applicator capable of producing a nonthermal aerosol spray with droplets ranging in size from 5 to 30 microns and a mass median diameter of 10 to 15 microns. Refer to label for proper calibration instructions of equipment. Observe precaution while spraying as spray droplets may permanently damage automobile paint.
0590A	Pine (including Southern Pines)		Use limited to professional pest control operators or personnel responsible for insect control programs in forest lands.
INASBRA INASCVA	Pales weevil Pitch-eating weevil	2% emulsion [6 gal/A] (4 lb/gal EC)	Seedling treatment. Apply immediately after transplanting. Treat each seedling with enough spray to thoroughly wet the foliage and stems to the point of runoff.
INBQAOA	Southern pine beetle	1% emulsion (4 lb/gal EC)	Bark and foliar application. Apply to individual trees to the point of runoff. For preventative treatment, apply to the main trunk in the early spring or when threat of attacks exists from nearby infested areas. Repeat as needed for continued protection. For remedial treatment, apply to the main trunk of infested trees (or to infested logs) when damage occurs but before adult beetles begin to emerge.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/670020A	Recreational Areas		
			Refer to ORNAMENTALS., (Lawns and Turf (including ground covers), Golf Course Turf cluster for control of lawn and turf pests.

NONCROP AQUATIC AREAS

General Warnings and Limitations: For use by trained personnel in public health organizations, mosquito abatement districts, public mosquito control programs and professional pest control operators only. Do not apply to water containing valuable crustaceans and fish. Consult your State Fish and Game Department before using this product.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/65000MB	Aquatic Areas		
/65038MB	Flooded Areas (including Flooded Noncrop Areas)		
/65038MB	Intermittently Flooded Areas (including Culverts, Open Street Catchbasins, Rain Barrels, Hollow Stumps, Temporary Rain Pools, Tree Holes, Woodland Pools)		
/65034MB	Log Ponds		
/65033MB	Stagnant Water		
/65033MB	Standing Water		
IOAMACC	Mosquitoes (larvae)	0.025-0.05 lb/A (1-2% G) (1% P/T)	Flooded area treatment. May be applied by aircraft. Apply uniformly over flood water when mosquito larvae are present.

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
Aquatic Areas cluster (continued)		
	1.5 ppm (10.6% Mcap)	Flooded area treatment. Apply uniformly over flood water when mosquito larvae are present. The rate is based on the total volume of water to be treated. To determined the volume of water present, measure the length, width and average depth of the impoundment (in feet) and calculate the cubic feet of water. Convert the calculated value to gallons by multiplying by 7.48. Labeling claims release of chlorpyrifos at a rate that will provide control of early instar larvae for one mosquito breeding season. Retreat previously treated areas only when control is no longer evident as indicated by the presence of third and fourth instar larvae.
	0.1 lb/A (1% G)	Prehatch treatment. Apply uniformly over known breeding areas prior to flooding.
	1.5 ppm (10.6% Mcap)	Prehatch treatment. Apply uniformly over known breeding areas prior to flooding. The rate is based on the total volume of water to be treated. To determined the volume of water present, measure the length, width and average depth of the impoundment (in feet) and calculate the cubic feet of water. Convert the calculated value to gallons by multiplying by 7.48. Labeling claims release of chlorpyrifos at a rate that will provide control of early instar larvae for one mosquito breeding season. Retreat previously treated areas only when control is no longer evident as indicated by the presence of third and fourth instar larvae.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Aquatic Areas cluster (continued)		
		0.0125-0.025 lb/A (0.33-4 lb/gal EC) (41.2% EC)***	Water related surface treatment. May be applied by aricraft. Dilute with water, kerosene, or fuel oil. Use in open areas or those with light to mediumm vegetative cover.
		0.025-0.5 lb/A (0.33-4 lb/gal EC) (41.2% EC)***	Water related surface treatment. May be applied by aircraft. Dilute with water, kerosene, or fuel oil. Use in areas with medium to heavy vegetative cover. Also may be used for faster results and longer residual control in open areas or those with light to medium vegetative cover. Under such conditions, this dosage should be used only where there are no fish or crustaceans or where their loss or loss of lower components of the food chain would not be significant.
/65038MB	Catch Basins		
IOAMAAC	Mosquitoes (larvae)	0.25% emulsion [0.5 pt/catch basin] (4 lb/gal EC)	Water related surface treatment. Apply as a coarse, low pressure spray. Uniformly cover the exposed walls (sides) of the basin and the water surface.
/65026MA	Cesspools		
/65026MA	Septic Tanks		
IOAMAAC	Mosquitoes (larvae)	2.5 oz/5,000 cu.ft water (4 lb/gal EC)	Water treatment. Apply directly or flush the required amount down toilet.

EPA Index to Pesticide Chemicals

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/65034MB /65026MB	Industrial Waste Water Impoundments Sewage Systems (including Sewage Ponds and Waste Disposal Ponds and Lagoons)		
IOAMAAC	Mosquitoes (larvae)	0.5 oz/5,000 cu.ft water or 4.35 oz/A ft water or 1 ppm (4 lb/gal EC)	Water related surface treatment. Pour the required dosage into the inflowing water or apply to the water surface as a coarse, low pressure spray. Treat stagnant water by diluting with sufficient water or oil to obtain uniform distribution.

12.4 oz/A ft = 20

DOMESTIC DWELLINGS, MEDICAL FACILITIES AND SCHOOLS

General Warnings and Limitations: Do not allow children or pets to contact treated surfaces until spray has dried. Remove pets and cover fish tanks and bowls before spraying. Do not replace dishes and food until spray has dried or eat any food that has been contaminated by spray. Thoroughly wash dishes and food handling utensils with soap and water if they become contaiminated by spray. In hospitals, remove patients prior to treatment. Ventilate rooms for 2 hours before returning patients.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/630010A /740000A	Domestic Dwellings (Indoor) Hospitals (Indoor, Inedible)		
ISASAAA	Ants	--	Indoor treatment. Apply with injection tube into cracks and crevices where pests may be present. Place injector tip 0.5 inch into areas to be treated, releasing approximately 1 second spray per spot. For light infestations or as preventive treatment apply at 3 foot intervals, for heavy infestations apply at 1 foot intervals if possible. For carpenter ants and carpenter bee, locate source of infestation and inject 5 to 10 seconds spray into tunnels and cavities of pests. For carpenter bee, seal entrance openings with small pieces of stainless steel wool after application. Whenever possible, spray directly on pests and repeat as needed.
IMMDACA	Booklouse	(0.5% PrL)	
INAAAEA	Branbugs		
IQAUACA	Boxelder bug		
ISASAFA	Carpenter ants		
ISBKABA	Carpenter bee		
ISBAAAA	Centipedes		
ILAVABA	Clover mite		
IOAGAHA	Cluster fly		
IVAAABA	Cockroaches		
IVAHAAA	Crickets		
INABAEA	Drugstore beetle		
IMDAAAA	Earwigs		
INAMDAA	Elm leaf beetle		
INASEKA	Grain weevils		
IJCAAAA	Millipedes		
IMPBACA	Silverfish		
IIFAAEA	Sowbugs		
AAAA	Spiders		
ACA	Ticks		
BMBEA	Tobacco moth		

Domestic Dwellings (Indoor) cluster (continued)

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
ISASAAA	Ants	0.25-0.5% emulsion (0.5-4 lb/gal EC) (6-41.2% EC) or 0.5% emulsion (0.5% RTU) (0.5% PrL)	Indoor treatment. Apply emulsifiable concentrate and liquid-ready to use formulations as a coarse spray or with a paint brush to areas where pests are normally found. Apply spray until area is wet, but not to the point of runoff. Repeat as needed. For ants, apply to trails, around doors and windows, and wherever else pest may find entrance. For carpet beetles, apply 0.5 percent emulsion along baseboards and edges of carpeting; in cracks and crevices; under carpeting, rugs, and furniture; in closets and on shelving; and wherever else pest is observed or presence suspected. For clover mite or heavy infestations of other pests, use a 0.5 percent emulsion. For cockroaches, a period of 4 to 7 days is normally required for maximum control. For spiders, apply directly to pests wherever possible. Also apply to localized areas where infestations occur, particularly around windows, doors, baseboards, and crawl spaces. For quick knockdown and/or flushing, tank mix with 2,2-dichlorovinyl dimethyl phosphate or pyrethrins.
INATAFA	Carpet beetles		
ISBAAAA	Centipedes		
ILAVABA	Clover mite		
IVAAABA	Cockroaches		
IVAHAAA	Crickets		
IMDAAAA	Earwigs		
IMPBABA	Firebrat		
IMNAAAA	Fleas		
IJCAAAA	Millipedes		
INARAGA	Sawtoothed grain beetle		
IMPBACA	Silverfish		
IIFAAEA	Sowbugs		
IKAAAAA	Spiders		

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
Domestic Dwellings (Indoor) cluster (continued)		
	0.293 oz/ 1,000 sq.ft (0.073 lb/ gal RTU) or 0.583 oz/ 1,000 sq.ft (0.146 lb/ gal RTU)	Indoor treatment. Before treating kitchen areas, remove all food, utensils, and other containers from cabinets or other storage areas. With a 3 to 4 inch applicator (brush, roller, or hand sponge), paint bands completely around the undersides of all shelving, never on the shelves where food may contact the treated surface. Remove all cabinet and vanity drawers and band 3 exterior sides of each. Do not apply to drawer interior or to front panel. Paint a band completely around the undersides of the counter top and side panels of cabinets. Pay special attention to treating under and around the sink. Band cabinet exteriors where they join the wall or at point of cracks and crevices. Paint a band around the cabinet base and baseboards of the entire home or facility, the flat surface around each door casing, and under shelving in closets and storage areas. Treat bathroom vanities in the same manner as kitchen cabinets. Interior window casings may be treated. Where quick knockdown and/or flushing action is desired, a pyrethrin spray may be used in hard to reach areas. May be applied as a coarse, low pressure spray (20 pounds per square inch) in 6 to 8 inch bands in attics and spider nesting areas of interior metal or wood framing of buildings. Avoid spraying to the point of runoff.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Domestic Dwellings (Indoor) cluster (continued)		
ISASAAA IVAAABA IOAAAAA ILAAABA IOAMAAA IKAAAAA ILAAACA	Ants Cockroaches Flies Mites Mosquitoes Spiders Ticks	3.28 gal 0.86% RTU/ 1,000 sq.ft (0.86% RTU)	Indoor treatment. Apply as a final coat of paint to walls, floors, and ceilings with brush or roller. May also be sprayed. Allow to dry for 20 days before washing. The painted surface should be washed with clear water anytime that it becomes covered with dust or dirt in order to reestablish maximum possible contact between the treated surface and pests.
ILAMAQA IMNAAAA ILAMACA	Brown dog tick Fleas Lone star tick	0.5% emulsion (1-4 lb/gal EC) (6-41.2% EC) (0.5% RTU) or -- (0.05% RTU) (0.09-0.5% PrL)	Indoor treatment. Apply as a spot application to infested areas such as pet beds and resting quarters, nearby cracks and crevices, along and behind baseboards, window and door frames, and localized areas of floor and floor coverings where pests may be present. Old bedding of pets should be removed and replaced with clean, fresh bedding after treatment. Do not treat pets with this chlorpyrifos formulation.
IVAAABA	Cockroaches (including American cockroach and German cockroach)	bait [4-6 baits/ 100 sq.ft] (0.5% Impr)	Indoor treatment. Use prepackaged bait stations or apply bait in teaspoon amounts in a suitable bait station or on paper, foil, paperboard, or other material that will permit removal. Locate stations where pests have been observed. Replacement of baits should be made at 28 to 42 day intervals as needed. If German cockroach is the main target species, place bait stations at more frequent intervals in areas where pest has been observed.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Domestic Dwellings (Indoor) cluster (continued)		
IVAAABA	(Cockroaches (including American cockroach and German cockroach))	strips [up to 36 strips/100 sq.ft] (10% Impr)	Indoor treatment for light infestations. Apply strips in all locations applicable to the area being treated, paying particular attention to areas where pests may hide or through which they may enter premise. Replace strips when effectiveness is diminished. If infestation persists, use a supplemental conventional treatment. Label claims effectiveness of 180 days.
/630030A	Domestic Dwellings (Outdoor)		Keep children and pets off treated areas until the chlorpyrifos has been washed into the soil and the grass is dry for granular formulations or until spray has dried for spray formulations. Keep out of lawn and garden fishponds and other bodies of water. Application for formulations greater than 10 percent active ingredient limited to professional pest control operators.
ISASAAA	Ants	0.0007 lb/ 100 sq.ft (0.1% D)	Outdoor treatment. Apply lightly in and around nests, along runways, and other places where ants congregate. Repeat at a minimum of 3 day intervals as needed.
		-- (0.5% G)	Outdoor treatment. Sprinkle the dry material on driveways, sidewalks, and patios. Do not water in.
		0.003 lb/ 100 sq.ft (0.5% G)	Outdoor treatment. Apply directly from canister over ant hills, along flower bed borders, and in rock gardens. Water into pest hiding areas and repeat as needed.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Domestic Dwellings (Outdoor) (continued)		
ISASAAA ILAWAAA ILAVABA IVAAABA IVAHAAA IMDAAAA IMNAAAA IJCAAAA IOAMAAA IIFAAEA ILAAACA	Ants Chigger mites Clover mite Cockroaches Crickets Earwigs Fleas Millipedes Mosquitoes Sowbugs Ticks (including brown dog tick)	0.08-0.13 lb/5,000 sq.ft (0.075-2.5% G) or 0.118 lb/5,000 sq.ft [94.7-113.6 gal/5,000 sq.ft] (0.156 lb/gal EC) or 0.09-0.117 lb/5,000 sq.ft [150 gal/5,000 sq.ft] (0.33-4 lb/gal EC) (2.35-41.2% EC)***	Outdoor treatment. Control of pests is a result of a lawn pest control program. If brown dog tick is a particular problem, pay special attention to pet resting areas.
		0.08-0.13 lb/5,000 sq.ft (0.5-2.32% G) or 0.118 lb/5,000 sq.ft [94.7-113.6 gal/5,000 sq.ft] (0.156 lb/gal EC) or 0.09-0.117 lb/5,000 sq.ft or 0.078-0.25 lb/100 gal (0.45-4 lb/gal EC) (2.35-41.2% EC)*** or 0.5% emulsion (0.5% RTU)	Outdoor treatment. To help prevent infestation of buildings, apply as a band 5 to 10 feet wide around and adjacent to buildings where pests are active and may find entrance and water into soil for granular formulations. Treat a band of soil 6 to 10 feet wide around and adjacent to the building and also the building foundation to a height of 2 to 3 feet where pests are active and may find entrance for spray formulations. Apply as a coarse spray to thoroughly and uniformly wet the band area. For liquid-ready to use formulation, apply to the building foundation to a height of 2 to 3 feet.

Domestic Dwellings (Outdoor) (continued)

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
ISASAAA	Ants	0.005-0.008 lb/25 running ft (0.5-0.8% G)	Outdoor treatment. Apply as a band or barrier 12 to 18 inches wide around dwelling.
IVAHAAA	Crickets		
IMDAAAA	Earwigs		
ILAAACA	Ticks		
		0.0025-0.004 lb/100 sq.ft (0.5-0.8% G)	Outdoor treatment. Apply in areas of heavy infestation or suspected harborages near buildings, tree trunks, shrubs, and outbuildings using a spreader.
ISASAAA	Ants	0.5% emulsion (0.5-4 lb/gal EC)	Outdoor treatment. Apply as a residual spray or with a paint brush to outside surfaces of buildings including porches, screens, window frames, eaves, patios, garages, refuse dumps, and other areas where pests congregate or have been observed. Repeat as needed. Do not apply to or allow spray to contact ornamental plants.
ILAWAAA	Chigger mites		
ILAVABA	Clover mite		
IVAAABA	Cockroaches		
IVAHAAA	Crickets		
IMDAAAA	Earwigs		
NAAAA	Fleas		
AAA	Flies		
BAAA	Grasshoppers		
IJCAAAA	Millipedes		
IOAMAAA	Mosquitoes		
ITBMABA	Sod webworms		
IIFAAEA	Sowbugs		
IKAAAAA	Spiders		
ILAAACA	Ticks (including brown dog tick)		
ISASAAA	Ants	0.2925 oz/ 1,000 sq.ft (0.073 lb/ gal RTU) or 0.583 oz/ 1,000 sq.ft (0.146 lb/ gal RTU)	Outdoor treatment. Apply to exterior window casings and thresholds and porch borders. Also apply around building foundations, roof overhang, support pillars, roof gables, and spider nesting areas of exterior metal or wood framing of buildings.
IVAHAAA	Crickets		
IMPBABA	Firebrat		
IKAAAAA	Spiders		
ISASAAA	Ants	0.05% emulsion (0.05% RTU) or 0.5% emulsion (0.5% RTU) or -- (0.5% PrL)	Outdoor treatment. Apply thoroughly to localized infestation in outdoor areas where there are weeds or brush non-crop areas. For fleas and ticks, apply in and around kennels, animal runs, or under porches where pets may rest. For ants, thoroughly wet hills and runways. Repeat as needed.
ILAMAQA	Brown dog tick		
ILAVABA	Clover mite		
IVAAABA	Cockroaches		
IVAHAAA	Crickets		
IMDAAAA	Earwigs		
NAAAA	Fleas		
AAA	Millipedes		
AAEA	Sowbugs		
IKAAAAA	Spiders		

Domestic Dwellings (Outdoor) (continued)

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
ISASAAA IVAAABA IOAAAAA ILAAABA IOAMAAA IKAAAAA ILAAACA	Ants Cockroaches Flies Mites Mosquitoes Spiders Ticks	3.28 gal 0.86% RTU/ 1,000 sq.ft (0.86% RTU)	Outdoor treatment. Apply as a final coat of paint to exterior surfaces of buildings with brush or roller. Allow to dry for 20 days before washing. The painted surface should be washed with clear water anytime that it becomes covered with dust or dirt in order to reestablish maximum possible contact between the treated surface and pests.
ISASAFA ISBKABA	Carpenter ants Carpenter bee	-- (0.5% PrL)	Outdoor treatment. Locate source of infestation and inject 5 to 10 second spray into tunnels and cavities of pests.
IOAAAAA ISBIADA IOAMAAA ITAAABA ISAAADA	(Flies) (Hornets) (Mosquitoes) (Moths) (Wasps)	0.5% emulsion (0.5% RTU) or -- (0.5% PrL)	Outdoor treatment. For reducing annoyance from these pests. Apply to outside surfaces of screens, door and window frames, or wherever pests may find entrance. Also apply under eaves, to dark corners, surfaces around light fixtures on porches, in garages, and other places where pests alight or congregate. Repeat as needed.
ISASBDA	Imported fire ants	0.008 lb/gal [1 gal/ mound] (0.5-4 lb/gal EC) (5.3-6.7% EC)***	Outdoor treatment. Apply using a sprinkler can. Thoroughly wet mound and surrounding area to a 4 foot diameter (12.5 square feet). Apply during cool weather when temperatures range 65 to 80 F (18.3 to 26.7 C) or in early morning or late evening. Apply to mounds as they appear and do not disturb the mound prior to treatment. If possible, treat all mounds in the vicinity and treat all colonies which may not as yet have constructed a mound.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	URBAN AND RURAL INDOOR/OUTDOOR AREAS (PUBLIC HEALTH)		
/680020A	Residential Areas		Use limited to public health officials and trained personnel of mosquito abatement districts and other public mosquito control programs.
IOAMAAJ	Mosquitoes (adults)	12 lb/98 gal solvent or maximum 0.03 lb/A (6 lb/gal SC/L)	Outdoor treatment. Thermal fog application. Dilute with number 2 fuel oil diesel or kerosene. Refer to label instructions for proper calibration of equipment.
		0.005-0.01 lb/A (6 lb/gal SC/L)	Outdoor treatment. Ultra low volume nonthermal (cold fog) application. Apply droplets ranging in size from 5 to 30 microns and a mass median diameter of 10 to 15 microns. Refer to label for proper calibration instructions of equipment. Observe precaution while spraying as spray droplets may permanently damage automobile paint.
	STRUCTURES, WOOD PRODUCTS AND WOOD COMMODITIY PROTECTION		
	(Terrestrial Structures (structural pest control and wood protection))		
/64000NA /64000NB	Terrestrial Structures		Use limited to professional pest control operators. This formulation of chlorpyrifos is designed for treatment of soil to establish a barrier which is lethal to termites. Chlorpyrifos must be adequately dispersed in the soil to provide a barrier between the wood in the structure and the termite colonies in the soil or to control termites living in the structure. It is necessary for the effective use of chlorpyrifos that the service technician be familiar with current control practices including trenching, rodding, subslab injection, and low pressure spray application.

CHLORPYRIFOS

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations

Terrestrial Structures (continued)

These techniques must be correctly employed to prevent or control infestations by subterranean termite species of Reticulitermes and Coptotermes. Choice of appropriate procedures includes consideration of such variable factors as the design of the structure, water table, soil type, soil compaction, grade conditions, and domestic water supplies, location and type. The biology and behavior of the involved termite species are important factors to be known as well as suspected location of the colony and severity of the infestation within the structure to be protected. For advice concerning current control practices for specific local conditions, consult resources in structural pest control. Annual inspections of the treated area should be made. Retreatment may be necessary if there is an active infestation or if there has been a disruption of the chemical barrier in the soil due to construction, excavations, landscaping, etc. Soil should not be treated when excessively wet. The termites' source of moisture should be eliminated by providing a chemical barrier and/or repairing faulty construction. Contamination of public and private water supplies must be avoided by following these precautions: Use antiback-flow equipment or procedures to prevent syphonage of pesticide back into water supplies. Do not treat soil that is water saturated or frozen. Consult state and local specifications for recommended distances of treatment areas from wells, and refer to Federal Housing Administration (F.H.A.) Specifications for further guidance. All nonessential wood and cellulose containing materials, including scrap wood and form boards,

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Terrestrial Structures (continued)		
			should be removed from around foundation walls, crawl spaces, and porches.
IMGDAGA	Subterranean termites (including *Coptotermis* and *Reticulitermes* spp)	1% emulsion (4 lb/gal EC)	Soil contact wood protection treatment. PRECONSTRUCTION SUBTERRANEAN TERMITE TREATMENT Effective preconstruction subterranean termite control requires the establishment of an unbroken vertical and/or horizontal chemical barrier between wood in the structure and the termite colonies in the soil. To meet F.H.A. termite proofing requirements, follow the latest edition of the Housing and Urban Development (H.U.D.) Minimum Property Standards. After grading is completed and prior to the pouring of the slab, slab supported/constructed porches, or entrance platforms, make the following treatments. Applications shall be made by a low pressure spray for horizontal barriers over areas intended for covering floors, porches, and other critical areas. Establish a vertical barrier in areas such as around the base of foundations, plumbing, back-filled soil against foundation walls, and other critical areas. 1. Where it is necessary to produce a horizontal barrier, apply the emulsion at the rate of 1 gallon of 1 percent emulsion per 10 square feet to dirt fill. If fill is washed gravel or other coarse material, apply at 1.5 gallons of 1 percent emulsion per 10 square feet. It is important that the emulsion reaches the soil substrate. a. If concrete slabs cannot be poured over soil the same day it has been treated, a waterproof cover, such as polyethylene sheeting,

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations

Terrestrial Structures (continued)

should be placed over the soil. This is not necessary if foundation walls have been installed around the treated soil.

2. To produce a vertical barrier, apply the emulsion at the rate of 4 gallons of 1 percent emulsion per 10 linear feet per foot of depth.
    a. Rodding and/or trenching applications should not be made below the top of the footing.
    b. Trench need not be wider than 6 inches.
    c. Rod holes should extend from the base of the trench to the top of the footing, and should be spaced (about 1 foot) to provide a continuous barier.
    d. Emulsion should be mixed with the soil as it is being replaced in the trench. Cover treated soil with a layer of untreated soil.
3. Hollow block foundations or voids of masonry shoud be treated to make a continuous chemical barrier in voids. Apply at the rate of 2 gallons of 1 percent emulsion per 10 linear feet so it will reach the footing.
4. For crawl spaces apply at the rate of 4 gallons of 1 percent emulsion per 10 linear feet per foot of depth from grade to bottom of foundations. Application may be made by rodding, low pressure spray, and/or trenching. Treat both sides of foundation and around all piers and pipes.
    a. Rod holes should be spaced (about 1 foot) to provide a continuous chemical barrier.

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations

Terrestrial Structures (continued)

b. Trench need not be wider than 6 inches nor below the foundation. The emulsion should be mixed with the soil as it is being replaced in the trench. Cover the treated soil with a layer of untreated soil.

c. Do not apply chlorpyrifos in any manner to an area intended as a plenum air space.

d. Do not apply chlorpyrifos as an overall treatment to soil in crawl spaces.

All holes drilled in construction elements for treatment should be securely plugged.

POSTCONSTRUCTION TREATMENTS
Postconstruction applications shall be made by injection, rodding, low pressure spray, and/or trenching. Do not apply emulsion until location of heat or air conditioning ducts, vents, water and sewer lines, or electrical conduits are known and identified. Extreme caution must be taken to avoid contamination of these structural elements and airways. Do not apply chlorpyrifos in any manner to an area intended as a plenum air space.

1. For slab-on-ground construction apply at the rate of 4 gallons of 1 percent emulsion per 10 linear feet. Application may be made by sub-slab injection. Injectors should not extend beyond the tops of the footings. Treat along the outside of the foundation and were necessary on the inside of foundation walls. Treatment may also be required along 1 side of interior partitions and along all cracks and expansion joints.

   a. Drill holes in the slab to

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations

Terrestrial Structures (continued)

provide a continuous chemical barrier.

b. Where necessary, drill through the foundation walls from the outside and force the emulsion just beneath the slab or along all the cracks and expansion joints and other critical areas.

c. For shallow foundations, 1 foot or less, dig a narrow trench approximately 6 inches wide along the outside of the foundation walls. Do not dig below the bottom of the foundation. The emulsion should be applied to the trench and the soil at the rate of 4 gallons of 1 percent emulsion per 10 linear feet as the soil is replaced in the trench. Cover the treated soil with a layer of untreated soil.

d. For foundations deeper than 1 foot follow rates for basements.

2. Hollow block foundations or voids of masonry should be treated to make a continuous chemical barrier in voids. Apply at the rate of 2 gallons of 1 percent emulsion per 10 linear feet.
3. For basements apply at the rate of 4 gallons of 1 percent emulsion per 10 linear feet. Where footings are greater than 1 foot of depth from the grade to the bottom of the foundation, application may be made by trenching and/or rodding. Treat outside of foundation walls, and if necessary along inside of foundation walls, along cracks in basement floors, along interior load bearing walls, around sewer pipes, conduits, and piers.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Terrestrial Structures (continued)		
			4. In crawl spaces apply at the rate of 4 gallons of 1 percent emulsion per 10 linear feet per foot of depth from grade to bottom of foundation. Application may be made by rodding, and/or trenching. Treat both sides of foundation and around all piers and pipes. a. Rod holes should be spaced (about 1 foot) to provide a continuous chemical barrier. b. Trench need not be wider than 6 inches nor below the foundations. The emulsion should be mixed with the soil as it replaced in the trench. Cover the treated soil with a layer of untreated soil. c. Do not apply chlorpyrifos in any manner to an area intended as a plenum air space. After treatment, securely plug all holes drilled in construction elements. d. Do not apply chlorpyrifos as an overall treatment to soil in crawl spaces. All holes drilled in construction elements for treatment should be securely plugged. Label claims it will provide residual control of subterranean termites for a minimum of 5 years when used properly.
AAADA	Wood boring beetles (including *Anobiidae*, *Cerambycidae*, and *Lyctidae* families)	1% emulsion (4 lb/gal EC)	Nonsoil wood protection treatment. For treatment of small areas, apply by brushing the emulsion evenly on wood surfaces. For large or overhead areas, apply as a coarse spray to the point of runoff. Sprayed surfaces should be avoided until the spray has totally dried. Do not apply in food serving areas

Site and Pest | **Dosages and Formulation(s)** | **Tolerance, Use, Limitations**

Terrestrial Structures (continued)

while food is exposed. Do not use in structures occupied by animals to be used for food purposes or which produce products for human consumption. Do not use in food areas of handling establishments, restaurants or other areas where food is commercially prepared or processed.

GRAIN, BULK COMMODITIES, PROCESSED FOODS AND FOOD CONTAINERS

(Stored Raw Agricultural Food and Feed Commodities, Storage and Handling Equipment)

60150A Storage Bins (Empty)

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
ASAAA	Ants	0.29 oz/ 1,000 sq.ft (0.073 lb/ gal RTU)	Paint band application. Before treating, remove all food from storage areas. Apply with a 3 to 4 inch applicator, paint bands completely around the undersides of all shelving, always under and never on the shelves where food may contact the treated surface. In case of severe infestation, flush hard to reach areas with a pyrethrin spray. Label claims that insects contacting treated areas, may live for several hours but will die and prevent reinfestation for 6 months.
AAABA	Cockroaches		
AHAAA	Crickets		
PBABA	Firebrat		
PBACA	Silverfish		
AAAAA	Spiders		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Commercial Transportation Facilities (Indoor, Edible) cluster (continued)		
AAABA	(Cockroaches (including American cockroach and German cockroach))	strips [up to 36 strips/100 sq.ft] (10% Impr)	Indoor treatment for light infestations. Apply strips in all locations applicable to the area being treated, paying particular attention to areas where pests may hide or through which they may enter premise. Replace strips when effectiveness is diminished. If infestation persists, use a supplemental conventional treatment. Label claims effectiveness of 180 days.

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	(Commercial Establishments (areas other than edible product))		
77000JC	Commercial, Institutional, and Industrial Areas (Indoor, Inedible)		
70000JC	Commercial Transportation Facilities		
72000JC	Eating Establishments (Indoor, Inedible)		
73000JC	Food or Grocery Marketing, Storage Plants/Areas (Indoor, Inedible)		
71000JC	Food Processing, Handling and Storage Plants/Areas (Indoor, Inedible)		
ASAAA	Ants	0.25-0.5% emulsion (0.33-4 lb/gal EC) (14.45-41.2% EC) or 0.5% emulsion (0.5% RTU) (0.5% PrL)	Indoor treatment. Apply emulsifiable concentrate and liquid-ready to use formulations as a coarse spray or with a paint brush to areas where pests are normally found. Apply spray until area is wet, but not to the point of runoff. Repeat as needed. For ants, apply to trails, around doors and windows, and wherever else pest may find entrance. For carpet beetles, apply 0.5 percent emulsion along baseboards and edges of carpeting; in cracks and crevices; under carpeting, rugs, and furniture; in closets and on shelving; and wherever else pest is observed or presence suspected. For clover mite or heavy infestations of other pests, use a 0.5 percent emulsion. For cockroaches, a period of 4 to 7 days is normally required for maximum control. For spiders, apply directly to pest wherever possible. Also apply to localized areas where infestations occur, particularly around windows, doors, baseboards, and crawl spaces. For quick knockdown and flushing, tank mix with 2,2-dichlorovinyl dimethyl phosphate or pyrethrins.
ATAFA	Carpet beetles		
BAAAA	Centipedes		
AVABA	Clover mite		
AHAAA	Crickets		
DAAAA	Earwigs		
PBABA	Firebrat		
CAAAA	Millipedes		
AMAAA	Mosquitoes		
PBACA	Silverfish		
FAAEA	Sowbugs		
AAAAA	Spiders		
AAAFA	Stored product insects (including branbugs, cigarette beetle, confused flour beetle, Indianmeal moth, Mediterranean flour moth, red flour beetle, rice weevil, sawtoothed grain beetle)		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Commercial, Institutional and Industrial Areas (Indoor, Inedible) cluster (continued)		
AAABA	Cockroaches (including American cockroach and German cockroach)	bait [4-6 baits/100 sq.ft] (0.5% Impr)	Indoor treatment. Use prepackaged bait stations or apply bait in teaspoon amounts in a suitable bait station or on paper, foil, paperboard, or other material that will permit removal. Locate stations where pests have been observed. Livestock pens may be treated but bait stations must be placed in a manner not accessible to animals. Replacement of baits should be made at 28 to 42 day intervals as needed. If German cockroach is the main target species, place bait stations at more frequent intervals in areas where pest has been observed. Maintain strict account of location and number of bait stations when applying bait where food is prepared, processed, or served. Do not apply bait until operations have ceased for the day. Remove bait stations before operations resume.
AAABA	(Cockroaches (including American cockroach and German cockroach))	strips [up to 36 strips/100 sq.ft] (10% Impr)	Indoor treatment for light infestations. Apply strips in all locations applicable to the area being treated, paying particular attention to areas where pests may hide or through which they may enter premise. Replace strips when effectiveness is diminished. If infestation persists, use a supplemental conventional treatment. Label claims effectiveness of 180 days.
70020A	Telephone Pedestals (Buried)		
ASAAA	Ants	0.15 oz/100 sq.ft (0.5% G)	Apply inside area. Distribute granules uniformly.

Site and Pest — Dosages and Formulation(s) — Tolerance, Use, Limitations

AERIAL, MOTHPROOFING AND TANK MIX APPLICATIONS

01500
AAAAA
Aerial Application

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Refer to
AGRICULTURAL CROPS
Corn, Cotton, Peanuts, Sorghum
NONCROP AQUATIC AREAS
Aquatic Areas

00300
AAAAA
Tank Mix

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Refer to
AGRICULTURAL CROPS
Almond, Apple, Cotton, Nectarine, Peach, Pear, Plum, Prune
DOMESTIC DWELLINGS, MEDICAL FACILITIES AND SCHOOLS
Domestic Dwellings (Indoor), Hospitals (Indoor, Inedible)
GRAIN, BULK COMMODITIES, PROCESSED FOODS, AND FOOD CONTAINERS
(Stored Raw Agricultural Food and Feed Commodities, Storage and Handling Equipment)
Storage Bins
COMMERCIAL ESTABLISHMENTS
(Commercial Establishments (areas other than edible product))
Commercial, Institutional and Industrial Areas (Indoor, Inedible), Commercial Transportation Facilities, Eating Establishments (Indoor, Inedible), Food or Grocery Marketing, Storage and Distribution Facilities (Indoor, Inedible), Food Processing, Handling and Storage Plants/Areas (Indoor, Inedible)

CHLORPYRIFOS

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	AGRICULTURAL CROPS		
/03001AA	Almond		0.05 ppm (almonds) 0.05 ppm (almond, hulls) Dormant or delayed dormant application through 0.5 pound per acre. Do not make more than 1 application during the dormant or delayed dormant periods. Do not allow meat or dairy animals to graze in treated orchards.
ITBCABA	Cutworms	0.25-0.5 lb/ 100 gal/A (4 lb/gal EC)	Dormant or delayed dormant application. Apply to the entire tree to the point of runoff. Use the Higher rate for severe infestation. Tank mix with oil.
ITAMABA	Peach twig borer		
IRAKBYA	San Jose scale		
/04001AA	Apple		0.05 ppm Dormant or delayed dormant application through 0.5 pound per acre. Do not make more than 1 application during the dormant or delayed dormant periods. Do not allow meat or dairy animals to graze in treated orchards.
ITBCABA	Cutworms	0.25-0.5 lb/ 100 gal/A (4 lb/gal EC)	Dormant or delayed dormant application. Apply to the entire tree to the point of runoff. Use the higher rate for severe infestation. Tank mix with oil.
IRACBQA	Rosy apple aphid		
IRAKBYA	San Jose scale		
/06002AA	Banana		0.05 ppm (banana pulp with peel removed) 0.25 ppm (banana, whole) Banded soil application through 3 grams per plant.
INASAWA	Banana root borer	3 g./plant (5% G)	Soil application (band). Apply a 6 inch band around the base of each plant. Repeat at 6 month intervals if trap counts indicate.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28001AA /28005AA	Beans		0.05 ppm beans (lima) 0.05 ppm beans (snap) 1 ppm beans (lima, forage) 1 ppm beans (snap, forage) 0.1 ppm (bean seeds) Seed treatment through 1 ounce per 100 pounds of seed. Do not mix the seeds and chlorpyrifos with bare hands. Do not use treated seed for human consumption, as feed for livestock or poultry, or for oil purposes.
INAKABA IOACAHA	Seedcorn beetle Seedcorn maggot	1 oz/100 lb seed (25-50% WP)	Slurry treatment of seeds prior to planting. Disperse in a water solution containing 0.5 percent (by weight) of any acceptable sticking agent. Use 12 to 15 fluid ounces of solution for each 100 pounds of seed to be treated. Mix the slurry with the seed using a rotating blender or other mixing equipment that will ensure each seed is uniformly coated. Dry the seed immediately after treatment. Treated seeds may be stored for up to 14 months without loss of insecticidal effectiveness. May be tank mixed with chloroneb, thiram, or captan.
/13005AA /13006AA /13007AA /13008AA	Broccoli Brussels Sprouts Cabbage Cauliflower		2 ppm Banded soil application (at planting) through 1.65 ounces per 1,000 feet of row not to exceed 2.25 pounds per acre. Do not make more than 1 application during the growing season.
IOACABA	Root maggots	0.81-1.61 oz/ 1,000 ft row (15% G)	Soil application at planting (band). Apply a 2 to 4 inch band ahead of the planter shoe or in front of the press wheel to achieve shallow incorporation.

CHLORPYRIFOS

Listing of Registered Pesticide Products by Formulation

94% technical chemical
  chlorpyrifos (059101)
    000464-00404

99% technical chemical
  chlorpyrifos (059101)
    000464-00558

0.5 lb/gal formulation intermediate
  chlorpyrifos (059101) plus petroleum distillate (063503)
    020954-00016

2.7 lb/gal formulation intermediate
  chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
    000464-00559

4 lb/gal formulation intermediate
  chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
    004887-00169   009782-00029

6 lb/gal formulation intermediate
  chlorpyrifos (059101)
    000464-00381

  chlorpyrifos (059101) plus xylene (086802)
    000464-00358

  chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
    000464-00567

0.33% formulation intermediate
  chlorpyrifos (059101)
    000059-00179

1% formulation intermediate
  chlorpyrifos (059101)
    000464-00474

10% formulation intermediate
  chlorpyrifos (059101)
    006720-00246

15% formulation intermediate
  chlorpyrifos (059101)
    006720-00245

25% formulation intermediate
  chlorpyrifos (059101)
    000464-00468

Listing of Registered Pesticide Products by Formulation (continued)

25% formulation intermediate (continued)

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
000432-00625

44.8% formulation intermediate
chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
006720-00195

50% formulation intermediate
chlorpyrifos (059101)
000464-00489

52.4% formulation intermediate
chlorpyrifos (059101)
000464-00564

0.1% dust
chlorpyrifos (059101)
002781-00016

25% dust
chlorpyrifos (059101)
000464-00509

0.075% granular
chlorpyrifos (059101)
000557-01858

0.14% granular
chlorpyrifos (059101)
020954-00083

0.2% granular
chlorpyrifos (059101)
000557-01903

0.23% granular
chlorpyrifos (059101)
000557-01855

0.3% granular
chlorpyrifos (059101)
003286-00050

0.33% granular
chlorpyrifos (059101)
011684-00006

Listing of Registered Pesticide Products by Formulation (continued)

0.4% granular

chlorpyrifos (059101)
007001-00269

0.46% granular

chlorpyrifos (059101)
002290-00037 007001-00303

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
000572-00216* 000904-00199 001159-00179
*jacket currently unavailable for review

0.47% granular

chlorpyrifos (059101)
009198-00043

0.5% granular

chlorpyrifos (059101)
000004-00207 000016-00101 000070-00178 000148-01266
000192-00141 000299-00200 000407-00397 000464-00399
000557-01865 000769-00429 000769-00488 000769-00495
000802-00532 000829-00223 000869-00158 000961-00274
001029-00123 002393-00245 004887-00182 005298-00020
005967-00148 006720-00131 006720-00175 006754-00069
007401-00296 008612-00094 009782-00021 013283-00008
015887-00014 033955-00540 033955-00541 034704-00055
034911-00012 042761-00003

0.51% granular

chlorpyrifos (059101)
000557-01925

0.52% granular

chlorpyrifos (059101)
044312-00002

0.55% granular

chlorpyrifos (059101)
000538-00094 000538-00095 000538-00098

0.57% granular

chlorpyrifos (059101)
000961-00328

0.575% granular

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
000572-00261

Listing of Registered Pesticide Products by Formulation (continued)

0.6% granular
chlorpyrifos (059101)
000961-00275

0.65% granular
chlorpyrifos (059101)
044312-00004

0.7% granular
chlorpyrifos (059101)
008780-00042

0.72% granular
chlorpyrifos (059101)
000829-00222

0.75% granular
chlorpyrifos (059101)
008660-00010

0.8% granular
chlorpyrifos (059101)
006720-00238

0.85% granular
chlorpyrifos (059101)
000538-00153

0.92% granular
chlorpyrifos (059101)
000538-00154 008780-00034 009198-00031 009198-00032
044312-00003 044312-00005

1% granular
chlorpyrifos (059101)
000070-00184 000148-01267 000279-02833 000464-00396
000769-00474 000904-00297 002393-00229 005481-00121
006720-00174 006720-00234 006720-00251 007001-00209
007401-00293 008329-00012 008590-00435 008590-00450
009782-00022 011682-00024 034682-00001

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
001769-00267

1.14% granular
chlorpyrifos (059101)
000961-00326 002169-00258 002169-00272

Listing of Registered Pesticide Products by Formulation (continued)

1.16% granular
chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
001159-00199

1.2% granular
chlorpyrifos (059101)
009198-00026

1.34% granular
chlorpyrifos (059101)
000538-00111

1.35% granular
chlorpyrifos (059101)
000538-00070

2% granular
chlorpyrifos (059101)
000279-02985 000769-00475 008590-00371

2.2% granular
chlorpyrifos (059101)
000538-00069

2.3% granular
chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
000004-00178

2.32% granular
chlorpyrifos (059101)
002290-00038 008590-00486 010404-00015 010404-00016
010404-00017

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
000572-00219 000904-00200 000961-00261 001159-00181
002169-00264 010711-00004

2.5% granular
chlorpyrifos (059101)
000299-00210 007001-00276 009198-00039 034704-00054

5% granular
chlorpyrifos (059101)
000464-00475 000464-00553

10% granular
chlorpyrifos (059101)
000464-00449

CHLORPYRIFOS

Listing of Registered Pesticide Products by Formulation (continued)

15% granular
  chlorpyrifos (059101)
    000464-00523

1% pelleted/tableted
  chlorpyrifos (059101)
    008329-00010

2.32% wettable powder
  chlorpyrifos (059101)
    033265-00003

25% wettable powder
  chlorpyrifos (059101)
    000464-00446   000464-00501

50% wettable powder
  chlorpyrifos (059101)
    000464-00547   008590-00264

10.6% microencapsulated
  chlorpyrifos (059101)
    000464-00517   008329-00013

0.5% impregnated materials
  chlorpyrifos (059101)
    004822-00153   006248-00017

10% impregnated materials
  chlorpyrifos (059101)
    008730-00009   008730-00010

0.156 lb/gal emulsifiable concentrate
  chlorpyrifos (059101) plus xylene (086802)
    000869-00149   043789-00063

0.33 lb/gal emulsifiable concentrate
  chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
    001769-00281

0.45 lb/gal emulsifiable concentrate
  chlorpyrifos (059101) plus petroleum distillate (063503)
    020954-00016

0.5 lb/gal emulsifiable concentrate
  chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
    001769-00282

Listing of Registered Pesticide Products by Formulation (continued)

0.5 lb/gal emulsifiable concentrate (continued)

chlorpyrifos (059101) plus petroleum distillate (063503)
000192-00142

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
000769-00486 033955-00547

0.667 lb/gal emulsifiable concentrate

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
033955-00548

1 lb/gal emulsifiable concentrate

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
000299-00202 000550-00127 000572-00213 000904-00222
005481-00068 006720-00148

chlorpyrifos (059101) plus xylene (086802)
003590-00008

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
000769-00487 000869-00172 042761-00004

chlorpyrifos (059101), petroleum distillate (063503) plus xylene (086802)
000602-00230

1.2 lb/gal emulsifiable concentrate

chlorpyrifos (059101) plus petroleum distillate (063503)
000373-00096

2 lb/gal emulsifiable concentrate

chlorpyrifos (059101)
000829-00226

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
000052-00239 000464-00343 000464-00412 000464-00447
000550-00138 000551-00190 000572-00286 000655-00466
000904-00234 000904-00235 000904-00294 000912-00074
001386-00570 003590-00006 004704-00016 004816-00593
006754-00037 007122-00068 007234-00041 009782-00020
011214-00004 011214-00017

chlorpyrifos (059101) plus heavy aromatic naphtha (006602)
002169-00233

chlorpyrifos (059101) plus petroleum distillate (063503)
001748-00098

Listing of Registered Pesticide Products by Formulation (continued)

2 lb/gal emulsifiable concentrate (continued)

chlorpyrifos (059101) plus xylene (086802)
000004-00200 000004-00212 000148-00892 000998-00072
000998-00073 038621-00005

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
000769-00485 008590-00394 008590-00395 034704-00065

chlorpyrifos (059101), aromatic petroleum derivative solvent (006501) plus heavy aromatic naphtha (006602)
000070-00180

chlorpyrifos (059101), aromatic petroleum derivative solvent (006501) plus xylene (086802)
006720-00059

4 lb/gal emulsifiable concentrate

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
000464-00368 000464-00448 000551-00191 000904-00295
001748-00097 006720-00206 007122-00059 009782-00028

chlorpyrifos (059101) plus xylene (086802)
000655-00499 000998-00071 003590-00007 005602-00058
007234-00040 038621-00006

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
000464-00360 000464-00464 000464-00524 000464-00562
002217-00646 008590-00556 034704-00066

chlorpyrifos (059101), heavy aromatic naphtha (006602) plus xylene range aromatic solvent (086803)
002169-00267

0.51% emulsifiable concentrate

chlorpyrifos (059101) plus heavy aromatic naphtha (006602)
000557-01880

2.2% emulsifiable concentrate

chlorpyrifos (059101) plus petroleum distillate (063503)
000557-01888

2.35% emulsifiable concentrate

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
006720-00237

2.85% emulsifiable concentrate

chlorpyrifos (059101) plus petroleum distillate (063503)
000299-00172 043789-00065

CHLORPYRIFOS

Listing of Registered Pesticide Products by Formulation (continued)

5.3% emulsifiable concentrate

chlorpyrifos (059101), aromatic petroleum derivative solvent (006501) plus petroleum distillate (063503)
000239-02423

5.4% emulsifiable concentrate

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
006720-00257

5.65% emulsifiable concentrate

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
010663-00024 010663-00025

6% emulsifiable concentrate

chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
008845-00030 042057-00100

chlorpyrifos (059101), aromatic petroleum derivative solvent (006501) plus xylene (086802)
002125-00068

6.6% emulsifiable concentrate

chlorpyrifos (059101) plus xylene (086802)
000869-00168

6.7% emulsifiable concentrate

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
034911-00018

6.79% emulsifiable concentrate

chlorpyrifos (059101), aromatic petroleum derivative solvent (006501) plus petroleum distillate (063503)
000802-00530

12.3% emulsifiable concentrate

chlorpyrifos (059101) plus xylene (086802)
000148-00891

14.45% emulsifiable concentrate

chlorpyrifos (059101) plus aromatic petroleum distillate (006601)
005602-00068

20% emulsifiable concentrate

chlorpyrifos (059101), aromatic petroleum derivative solvent (006501) plus petroleum distillate (063503)
000327-00135

212

CHLORPYRIFOS

Listing of Registered Pesticide Products by Formulation (continued)

22.4% emulsifiable concentrate
chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
008780-00038

chlorpyrifos (059101) plus heavy aromatic naphtha (006602)
000655-00588

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
033955-00537

23.7% emulsifiable concentrate
chlorpyrifos (059101)
000464-00450

24.9% emulsifiable concentrate
chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
000904-00240*
*jacket currently unavailable for review.

25% emulsifiable concentrate
chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
001159-00196

41.2% emulsifiable concentrate
chlorpyrifos (059101) plus aromatic petroleum derivative solvent (006501)
004816-00594

6 lb/gal soluble concentrate/liquid
chlorpyrifos (059101) plus xylene (086802)
000464-00428

0.073 lb/gal liquid ready-to-use
chlorpyrifos (059101) plus petroleum distillate (063503)
026693-00001

0.146 lb/gal liquid ready-to-use
chlorpyrifos (059101) plus petroleum distillate (063503)
026693-00002

3.8 lb/gal liquid ready-to-use
chlorpyrifos (059101)
000410-00082 000464-00542

0.05% liquid ready-to-use
chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
004758-00135

9999999 State Label Registrations

AZ Reg. No.

026693-03446

CA Reg. No.

000550-04776 000909-04674 000909-04699 005481-03838
007001-07731 008278-09129 008278-09272 010965-09885
011015-06997

FL Reg. No.

000539-09223 000550-04775 000829-06767 002342-06963
003122-07568 006720-03366 009404-03472 009404-03488
009782-03626 009782-03627 009782-03628 009782-10405
009782-10483 026885-10146 034822-03138

HI Reg. No.

035053-05218 037843-08564 037843-08565

MD Reg. No.

035278-04458

MI Reg. No.

031398-06602 031398-06603

NY Reg. No.

006665-09472

TX Reg. No.

000557-08277 000557-09757 000557-09758 000557-09759
000557-09760 000557-09761 000557-09762 000557-09763
000557-09764 000557-09765 000557-09766 000557-09767
000557-09768 000557-09769 000557-09770 000557-09771
000557-09772 000557-09773 000557-09774 000557-09775
000557-09776 000557-09777 000557-09778 000557-09779
000557-09780 000557-09781 000557-09782 000557-09783
000557-09784 010370-04457 012188-03130 013268-03139
015887-04982 034149-03545 034149-03546

B225/10

Listing of Registered Pesticide Products by Formulation (continued)

0.25% liquid ready-to-use

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
004822-00176

0.5% liquid ready-to-use

chlorpyrifos (059101)
000432-00624 004822-00156

chlorpyrifos (059101) plus aromatic petroleum distillate (006601)
008845-00021 008845-00031 034911-00017 036272-00015

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
000239-02490 000299-00214 000464-00560 000475-00229
000478-00108 000654-00126 000769-00507 003696-00109
003696-00112 004822-00177 004981-00061 009367-00029
009688-00042 010370-00029 033955-00550 034704-00086
045385-00015

chlorpyrifos (059101), aromatic petroleum derivative solvent (006501) plus petroleum distillate (063503)
000478-00092 000869-00167 005748-00067 043789-00061

0.86% liquid ready-to-use

chlorpyrifos (059101)
045600-00001

0.09% pressurized liquid

chlorpyrifos (059101)
000773-00053

0.22% pressurized liquid

chlorpyrifos (059101)
000464-00471 002382-00077 003134-00038 045078-00013

0.5% pressurized liquid

chlorpyrifos (059101)
000499-00147

chlorpyrifos (059101) plus petroleum distillate (063503)
000602-00284 004822-00152

chlorpyrifos (059101) plus xylene range aromatic solvent (086803)
000478-00110 009688-00044

chlorpyrifos (059101), petroleum distillate (063503) plus xylene range aromatic solvent (086803)
004822-00179 009688-00046